OFFICIAL PUBLICATION OF THE PROCEEDINGS AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

VOLUME 44, NO. 14
JULY 4, 1955

AMERICAN DYESTUFF REPORTER

Devoted to Textile Chemistry
BLEACHING • DYEING • PRINTING • FINISHING

Du Pont Dyes

DU PONT

BETTER THINGS FOR BETTER LIVING
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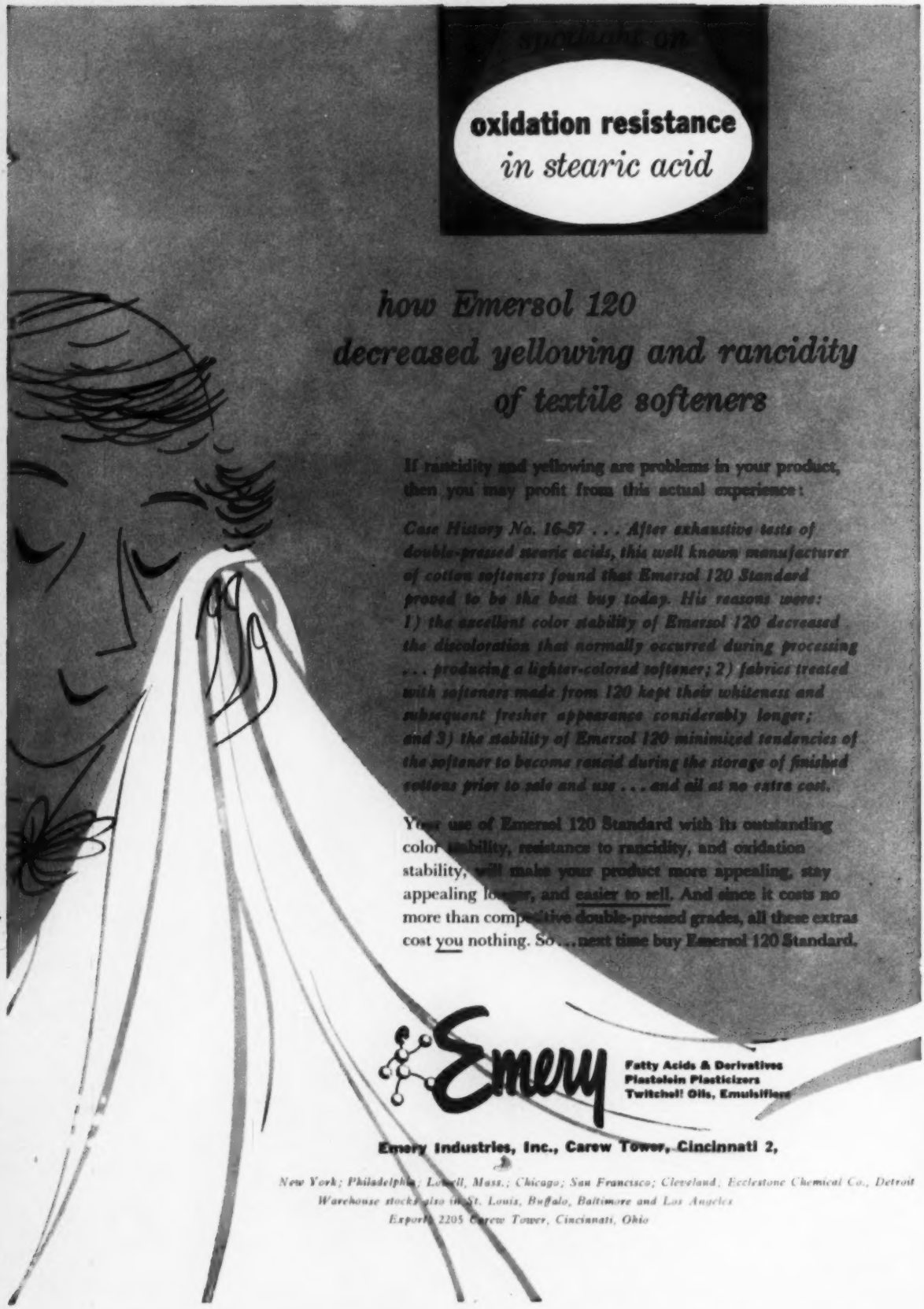
The next time you talk to your Du Pont salesman, remember the well-trained staff behind him. They're all—*at your service*. Contact: E. I. du Pont de Nemours & Co. (Inc.), Dyes and Chemicals Division, Wilmington 98, Del.



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If rancidity and yellowing are problems in your product, then you may profit from this actual experience:

Case History No. 16-57 . . . After exhaustive tests of double-pressed stearic acids, this well known manufacturer of cotton softeners found that Emersol 120 Standard proved to be the best buy today. His reasons were: 1) the excellent color stability of Emersol 120 decreased the discoloration that normally occurred during processing . . . producing a lighter-colored softener; 2) fabrics treated with softeners made from 120 kept their whiteness and subsequent fresher appearance considerably longer; and 3) the stability of Emersol 120 minimized tendencies of the softener to become rancid during the storage of finished cottons prior to sale and use . . . and all at no extra cost.

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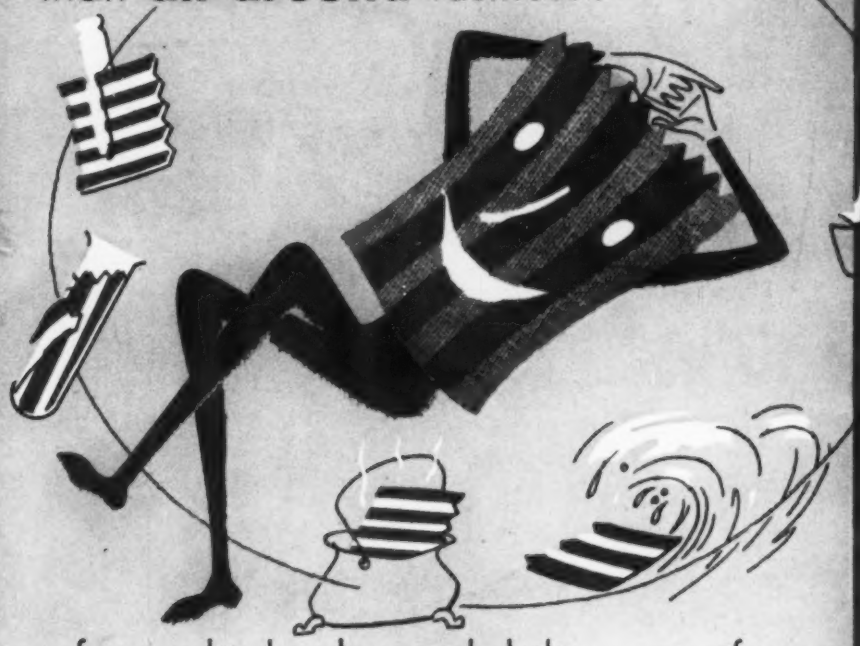

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Behind today's AMANTHRENES lie years of research and experiment . . . years devoted by A.A.P. to helping dyers and printers conquer their most difficult problems of color fastness. By specifying AMANTHRENES for the **printing** and **dyeing** of cottons and rayons, you reap the full benefit of this vast experience, for they give you **multiple fastness** . . . to sunlight, washing, dry cleaning, perspiration, sea water, chlorine or peroxide bleaching and soda boiling.

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Here is a snapshot of my boys. I know that you would like to see the men who solved your problems by producing that special polyvinyl acetate for your specific need. So many people have heard that we do attack each mill's problem individually and have made so many modifications in the emulsion polymers and copolymers for natural and synthetic yarns and fabrics, that we are building a new plant to accommodate the terrific demands.

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I'm looking forward to the opportunity of helping you with any other problems that you may have with your own new developments, whether in the fields of latices or resin emulsions.

Sincerely,

Bill

William Caldwell
Wica Chemicals, Incorporated

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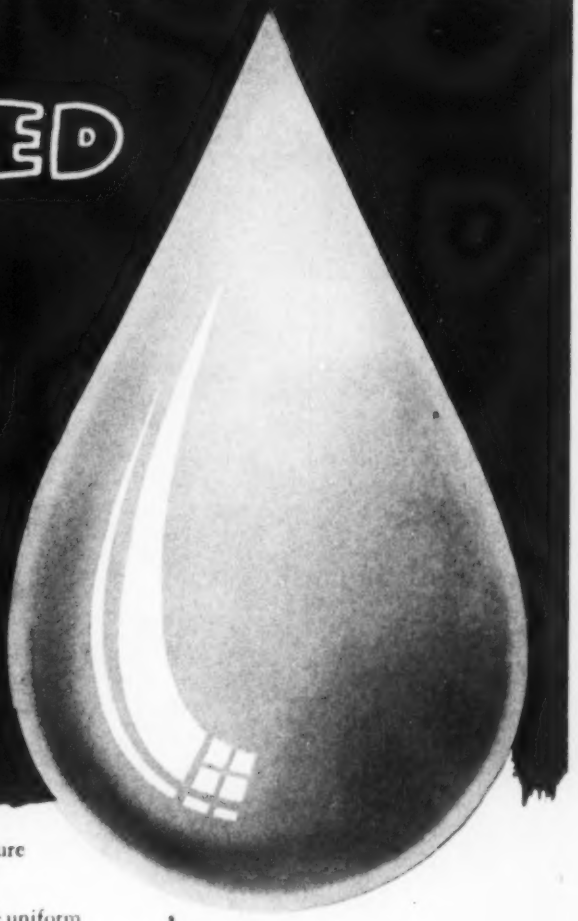

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Eastman Acetate Dyes are sold in the United States through Eastman Chemical Products, Inc., a subsidiary of Eastman Kodak Company, in Kingsport, Tenn., Lodi, N. J., and Greenville, S. C. On the West Coast through Wilson Meyer Co.: San Francisco, Los Angeles, Portland, Seattle and Salt Lake City. In Canada, through Clough Dyestuff Company, Ltd., St. Laurent, Quebec.

—the finest acetate fibers and dyes are made by **Eastman**

NAPHTOLS
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FAST COLOR
SALTS and
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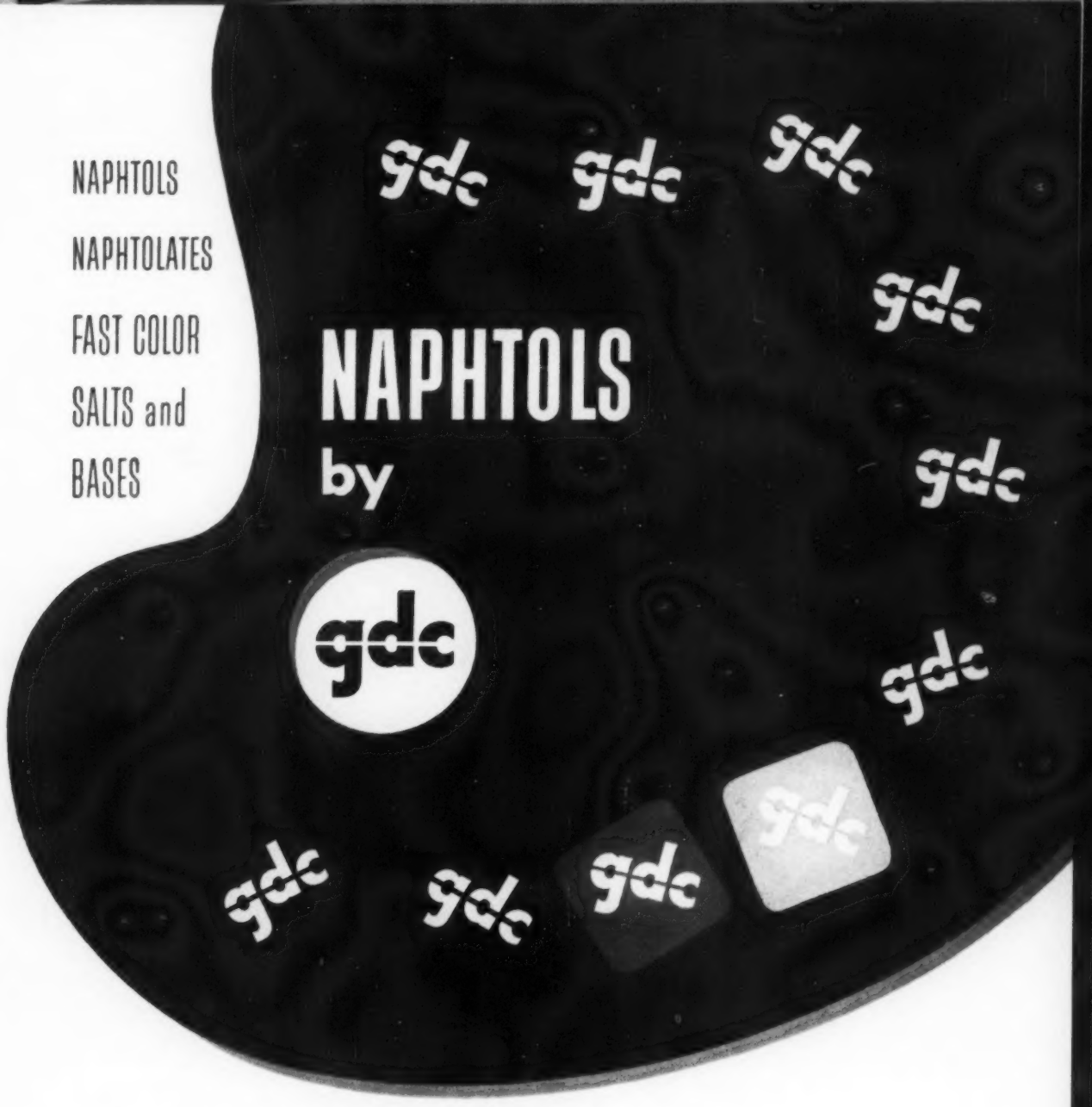

Colors fast to washing... fast to sunlight

Whatever the volume of the dyer or printer—whatever his method—GDC offers the broadest range and the right combination of products to create the whole spectrum of fashion-right shades. These range from bright yellows and reds to rich deep wines, navies and browns. They are dependable allies in meeting today's ever-increasing demand for fast colors.

Years of manufacturing experience and extensive technical resources are continually at work for you—breeding new refinements into our products—creating new benefits to you. The Naphtols, Fast Color Salts and Bases are *now non-dusting* powders. Most of them offer greater ease of solubility and better stability in dyeing and printing, as well as in storage. These are all plus factors. For those who prefer to work with a prepared naphtol solution, we offer liquid Naphtolates.

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Unmatched for operating efficiency and economy at low initial cost! That's the Foxboro #8D Stabilflo Air Motor... your best choice for roll loading on padders, mangles, quetsch boxes, and other equipment requiring moderate roll separation.

Stabilflo is an air-to-load, spring-to-lift diaphragm motor. Normally connected direct to top roll bearing without levers, it practically eliminates friction. No pressure seals or stuffing boxes. No air leakage. Easy to install. Typical installations have operated for 5 years without attention.

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Write for details on this and other sizes of Stabilflo Air Motors, and on other Foxboro Pneumatic Roll Loading Systems. **The Foxboro Company, 297 Norfolk Street, Foxboro, Massachusetts, U.S.A.**

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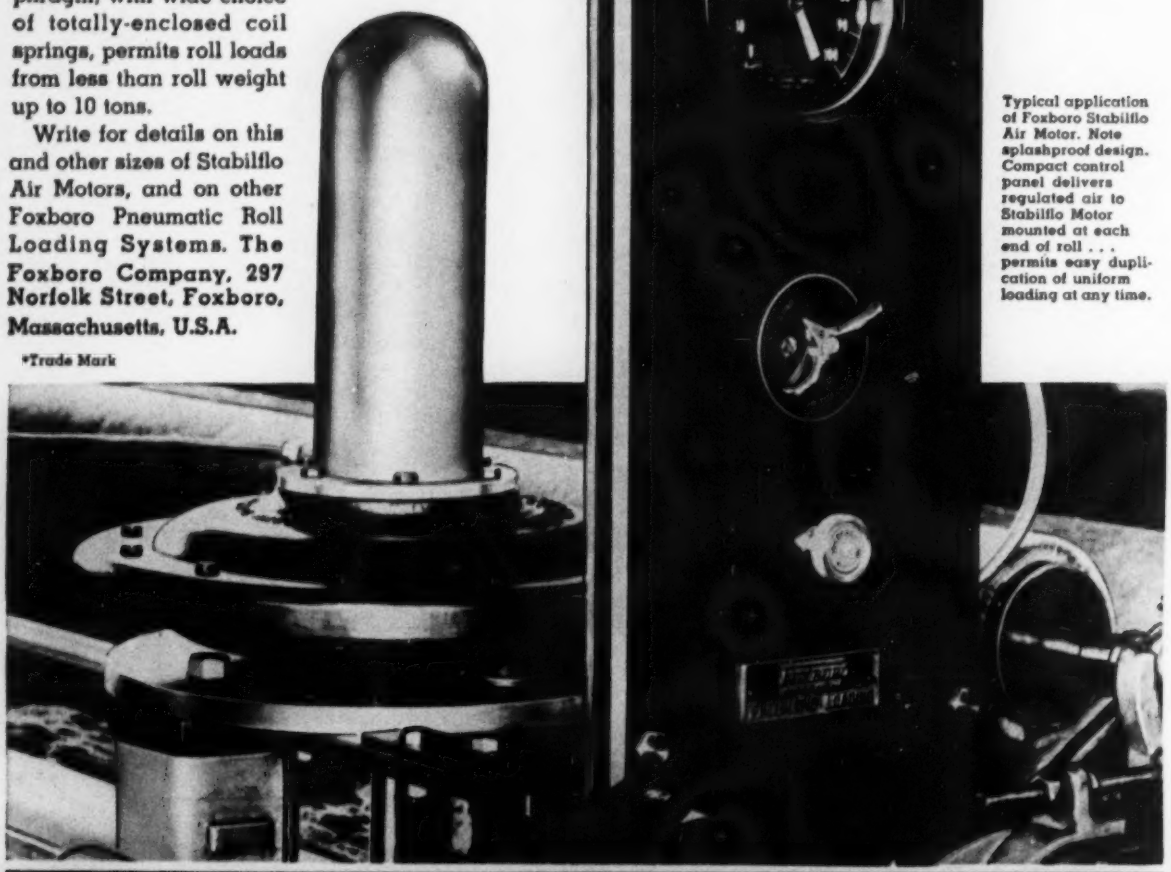

Typical application of Foxboro Stabilflo Air Motor. Note splashproof design. Compact control panel delivers regulated air to Stabilflo Motor mounted at each end of roll . . . permits easy duplication of uniform loading at any time.

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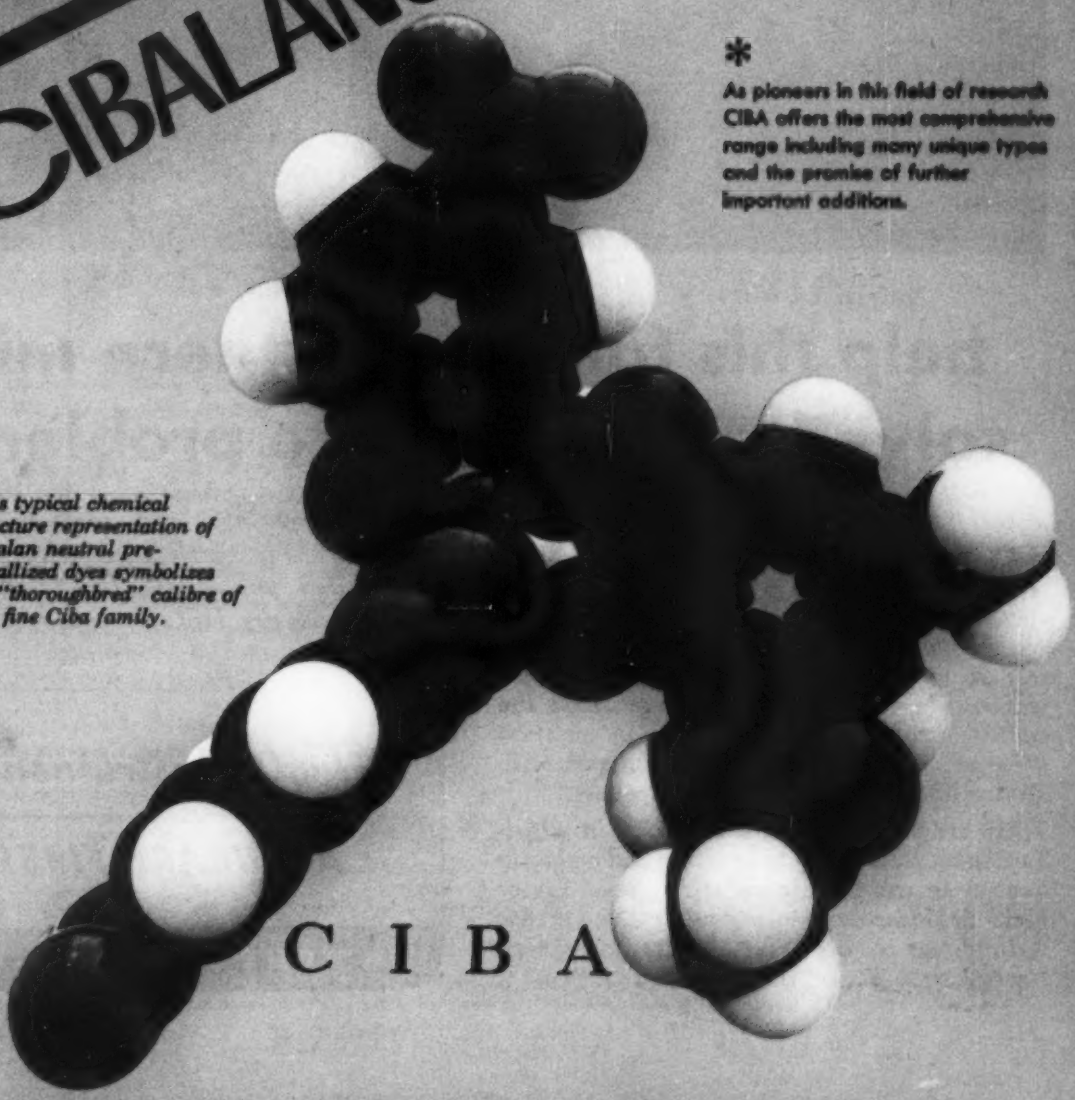
As pioneers in this field of research CIBA offers the most comprehensive range including many unique types and the promise of further important additions.



This typical chemical structure representation of Cibalan neutral pre-metallized dyes symbolizes the "thoroughbred" calibre of this fine Ciba family.

C I B A

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help this famous Southern mill solve its toughest dye problems

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The ULTRAWETS are cutting textile processing costs with a combination of skills you seldom see. These superior alkyl aryl sulfonates can work wonders in *cotton scouring, wool scouring, soaping off and dye leveling.*

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DU PONT DUPONOL* RA . . .

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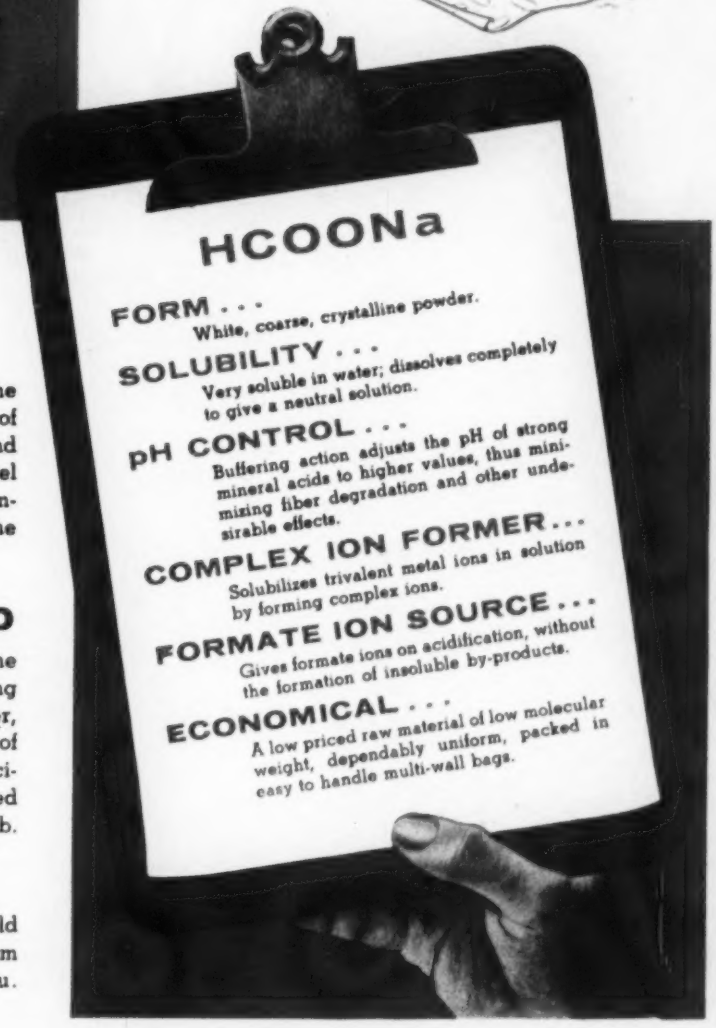
Can these features of Heyden SODIUM FORMATE help your process?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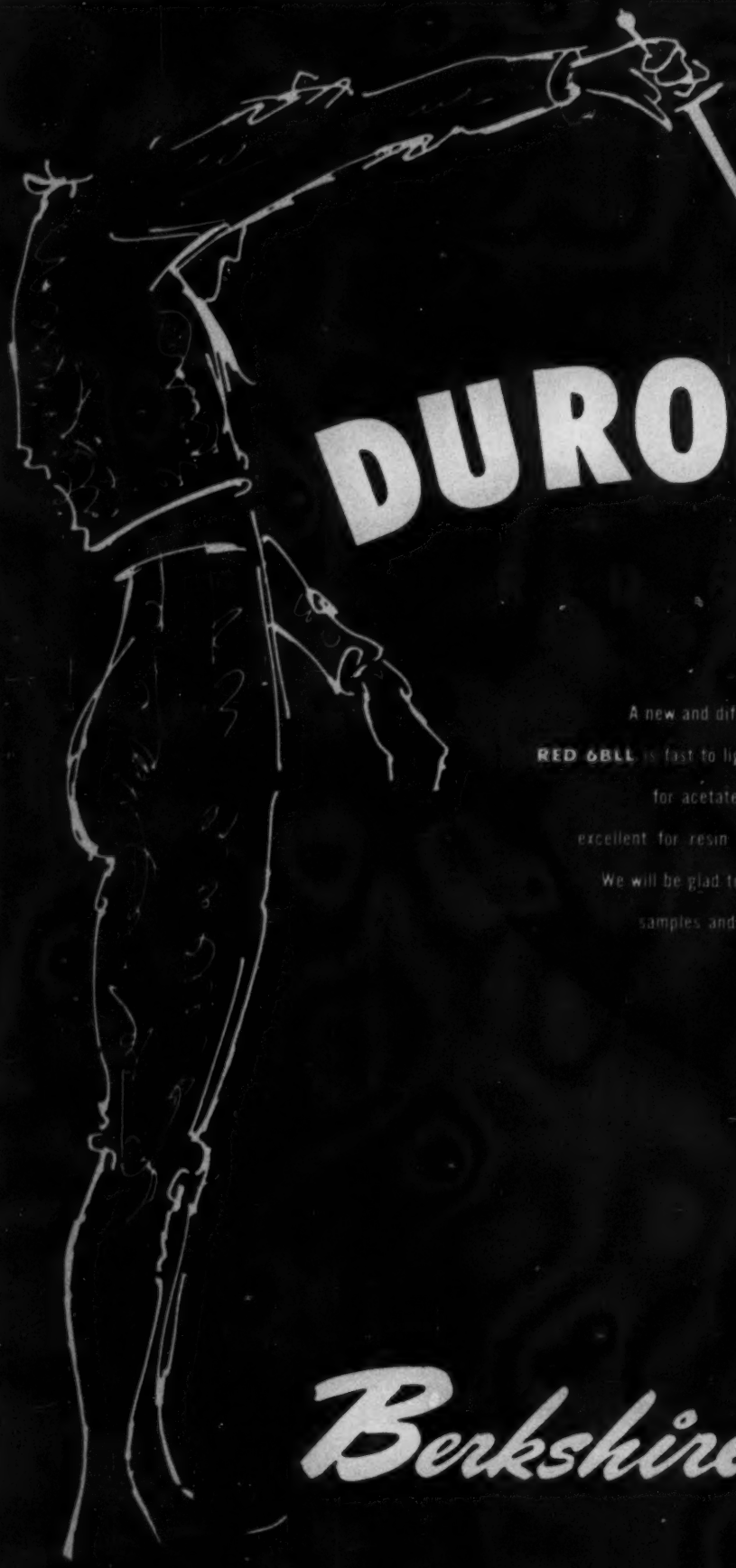

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RED 6BLL is fast to light and washing, useful
for acetate and nylon reserves. It is also
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We will be glad to send color cards,
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cuts color bleeding AND INCREASES FASTNESS TO HIGH TEMPERATURE WASHINGS

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- **increases fastness to washing and perspiration**
- **improves color fastness to wet-pressing and wet-processing**
- **effects little or no change in dyed yarns or fabrics**
- **used in combination with resins and finishes**

Dyers will like Perma Fix-45 for its **easy application — quality results — lower costs**

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AMERICAN
DYESTUFF REPORTER

Devoted to Textile Chemistry
BLEACHING · DYEING · PRINTING · FINISHING

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Allied Chemical

Proceedings of the

American Association of Textile Chemists and Colorists

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Editor of Proceedings: Carl Z Draves

JULY 4, 1955

AATCC CALENDAR

COUNCIL
Wednesday evening, Sept 21 (Chalfonte-Haddon Hall, Atlantic City, N J); Nov 18, Jan 20 (Hotel Statler, New York, N Y); Apr 20, 1956; June 15, 1956.

NATIONAL CONVENTIONS
Sept. 21-24, 1955 (Chalfonte-Haddon Hall, Atlantic City, N J); 1956 (Waldorf-Astoria, New York); 1957 (Boston); 1958 (Chicago); 1959 (Washington, DC—tentative).

MID-WEST SECTION
Oct 29 (Bismarck Hotel, Chicago, Ill).

NEW YORK SECTION
Oct 14, Nov 18 (Kohler's Swiss Chalet, Rochelle Park, N J); Jan 27, Feb 24 (Hotel Delmonico, New York, N Y); Mar 23, Apr 27, May 18 (Kohler's Swiss Chalet, Rochelle Park, N J).

NORTHERN NEW ENGLAND SECTION
Oct 14; Dec 9.

PACIFIC SOUTHWEST SECTION
Oct 7, Feb 6 (Gourmet Restaurant, Beverly Hills, Calif); Dec 2.

PHILADELPHIA SECTION
Oct 21 (Penn-Sherwood Hotel); Dec 2, Jan 13 (Kugler's Restaurant).

PIEDMONT SECTION
Oct 29 (Hotel Wm R Barringer, Charlotte, N C).

RHODE ISLAND SECTION
Oct 13, Dec 1 (Johnson's Hummocks, Providence).

SOUTH CENTRAL SECTION
July 29-30 (Lookout Mtn Hotel, Chattanooga, Tenn); Dec 10 (Hotel Patten, Chattanooga, Tenn).

SOUTHEASTERN SECTION
Sept 10 (Ralston Hotel, Columbus, Ga); Dec 3 (Atlanta Biltmore, Atlanta, Ga).

WESTERN NEW ENGLAND SECTION
Sept 16 (Rapp's Restaurant, Shelton, Conn); Nov 4 (Hartford, Conn); Dec 16 (Rapp's).

Buttons bearing the insignia of the AATCC are available from the Secretary at a new price of $2.25. Pins, with safety clasp, are also available at $2.50 each. Write direct to H C Chapin, AATCC Secretary, Post Office Box 28, Lowell, Mass.

ACTIVITIES OF THE LOCAL SECTIONS

NEW YORK———Over 350 members and guests attended the annual outing and golf tournament of the New York Section on June 17th at the North Jersey Country Club, Wayne Township, N J.

Prizes awarded by the outing chairman, Robert W Brewer, American Aniline Products, Inc, at the conclusion of dinner were as follows: *golf*——low gross, William T Clarke, Arnold, Hoffman & Co, 73; 2nd low gross, Thomas M Chadwick, Newburgh Bleachery, 76; 3rd low gross, Jules J Devigne, Interchemical Corp, 77; first low net, S Monroe, Texstyle Corp, 107-36—71; 2nd low net, Chris W Farrell, Althouse Chemical Co, 79-7—72; 3rd low net, L Monroe, Patex, Inc, 82-10—72; longest drive, L Monroe; putting contest, Chris W Farrell; *horseshoe pitching*——1st—Ralph R Mercer, General Dyestuff Co; 2nd—Herb Harries, Morningstar, Nicol; 3rd—Frank Habersberger, Kelco Co. Surprise awards were presented to officers and councilors of the Section, each of the councilors receiving a live piglet; the chairman and treasurer, a live duck; and the secretary, a live rooster. The Martin Weiner Co Fashion Plate Award for the most colorful sports shirt was presented to J Harlow, Bellman Brook Bleachery.

Assisting Mr Brewer on the outing committee were Robert F Holoch, National Aniline Div, Michael F Costello, Jacques Wolf & Co, and Gerard Heine and Donald Marnon of American Aniline Products, Inc.

Section Chairman John H Hennessey, Berkshire Color & Chemical Co, announced that Mr Brewer would be chairman for the 1956 outing.

* * * * * *

PHILADELPHIA———The Educational Committee of the Philadelphia Section will offer two series of lectures during the Fall season of 1955, to be held at the Philadelphia Textile Institute beginning September 26th.

The first of these series, "Finishing of Textiles," will be presented on nine successive Monday nights beginning September 26th and continuing through November 28th as follows: Sept 26———General Survey of Mechanical Finishing; Oct 3——— General Survey of Chemical Finishing; Oct 10 and Oct 17———Wool Finishing; Oct 24 and Nov 7———Cotton Finishing; Nov 14———Rayon & Acetate Finishing; Nov 21———Nylon Finishing; Nov 28———Finishing of Other Synthetics. This course will cost $20.00 per person, which will include cost of textbook. Class hours will be from 7:30 to 9:30 p.m.

The second of the series "Thermodynamics and Its Application to the Theory of Dyeing," will begin Tuesday, Sept 27, and will continue on Tuesday and Thursday evenings for ten weeks, closing on Dec 6th. The following subject matter will be included: Basic Concepts, Thermo Chemistry, Second Law of Thermodynamics, Thermodynamic Functions, Third Law of Thermodynamics, Dilute Solutions, Chemical Equilibrium in Dyeing Reactions, Adsorption of Dyes, Intermolecular Forces, Adsorption of Dyes at Electrofied Interfaces, and Intermolecular Forces in Solutions. Reservations are very limited by the complex nature of the courses, which will cost $35.00 per person. These lectures will be presented by Brian E Conway, research fellow at the Univ of Pennsylvania, and J L R Landry, PTI.

Thomas H Hart, Hart Products Corp, heads the Educational Committee. He is assisted by Robert C Bokum, director of the Evening School, PTI; Arthur W Etchells, Hellwig Dyeing Corp; Alfred F Felgendreger, Continental Mills; Bertrand W Hayward, director, PTI; J L Richard Landry, Jr, PTI; Richard B Stehle, Allegheny Dye Works; and Percival Theel, PTI.

Further information and reservations may be obtained by writing to the Educational Committee, Philadelphia Section, AATCC, P O Box 5025, Philadelphia 11, Pa.

* * * * * *

AATCC Newsgram

July 4, 1955

NEWS IN GENERAL

Corporate membership drive for AATCC research funds, launched in April, has already resulted in 24 new corporate memberships, Al Johnson reported at the recent Council meeting June 17 in New York. . . . This represents new-member income since April 7 of $4,200. . . . Mr Johnson, chairman of the Corporate Membership Committee, urged the 200 AATCC members participating in the campaign to keep up the good work. Only with maximum co-operation will the machine run smoothly. . . . Results are still coming in consistently and total membership and revenue continue to climb. Current corporate membership is up to 300 and the Committee hopes to double this ultimately.

Booth sales at the 1955 Dyeing and Finishing Exhibit, to be held with the AATCC Convention, continue strong and encouraging. Other selected exhibitors and what they plan to show are: American Bemberg, fabrics and fibers; Carbide and Carbon Chemicals, line of chemicals; Gaston County Dyeing Machine Co, package-dyeing equipment; General Electric Co, recording spectrophotometer; E F Houghton & Co, oils and chemicals; Sandoz Chemical Works, Inc, dyestuffs; Virginia Smelting Co, textile chemicals; Jacques Wolf & Co, chemical specialties.

AT RESEARCH HEADQUARTERS:

Textile specimens from the atomic explosion in Nevada are being evaluated in the AATCC labs, preparatory to a complete report on the results of the "shot" to be given at the next TCR meeting, Thursday, Sept 22, at the National Convention . . . Harlan E Glidden, research associate at the AATCC labs, is co-operating on a new Accelerotor inter-laboratory test program. This program, involving a detailed comparison of one-use abrasive liners and the multiple-use abrasive-in-depth liners, has been initiated and is being carried out in full co-operation with the Committee on Abrasion. . . . Research budget of $65,000 was approved by Council and it's hoped this can be raised to $75,000 in near future, Leonard Little,ECR chairman, reports. . . . A replacement for the late Ed Johnstone and additional help for the Lowell staff are planned soon. . . . A pension and insurance program for the staff at the Lowell labs is under study.

COMMITTEE NEWS:

Charles Dorn has been named nonvoting technical adviser on AATCC test methods with the Advisory Board for the New York State Flammability Law, which took effect on the 1st of this month . . . Mr Dorn reported at TCR meeting June 17 that two flammability testers, the Laurin machine and the Cummings machine, are being sent to Lowell for checking with the standard instrument. . . . A new committee on Analytical Methods has been appointed, Mr Dorn said, with P J Wood as chairman. Objective of this committee was defined by Mr Wood as "the devising or selecting of satisfactory standard methods for determining the reducing activity of sodium hydrosulfite."

Also at TCR meeting June 17: Atmospheric Fading Committee Chairman Victor Salvin reported the committee will investigate ozone fading, using natural conditions as well as instrument testing. . . . Wool Scouring Processes Committee reported it has established almost without doubt that chlorophyll pigments are the light-fugitive elements in sheep dung which, when present in wool after scouring, cause rapid fading toward the violet. The committee will prepare a paper for publication covering work to date. . . . Durable Finishes Committee Chairman Ernest Kaswell (noting that the committee has been investigating only wrinkle resistance and crease retention of fabrics and that there has been a request for work on the effect of finishes durable to washing, drycleaning and other conditions) suggested a survey on this should be done jointly with other committees, and also urged that a new committee be formed to evaluate these requests. . . . Standard Soils Committee will write a report on the available soils, Chairman O C Bacon reports. . . . Frank Rizzo, of the Quartermaster Research and Development Command, Natick, Mass, presented an abstract of the original OD No. 7 study and praised the excellent work AATCC did on this project.

Miles Dahlen to be 12th Olney Medalist

MILES A DAHLEN, advisor on dyes, intermediates and related chemicals in the Technical Division of the Organic Chemicals Department, E I du Pont de Nemours & Co, Inc, Wilmington, Del, has been selected as the winner of the Olney Medal for 1955. The Medal, highest award of AATCC, is presented annually for "outstanding achievement in the field of textile chemistry."

Dr Dahlen will be the 12th recipient of the Olney Medal, which is endowed by Howes Publishing Co, Inc, and awarded each year at the Annual Convention in memory of Louis A Olney, founder of AATCC.

Dr Dahlen began his career with the Du Pont Co in 1928, after receiving his doctorate from the University of Minnesota, where he was a Du Pont fellow. He first worked as a research chemist at the Jackson Laboratory at Deepwater Point, N J, was made a section head in 1930, a division head in 1932, and in 1938 was transferred to the Organic Chemical Department's Technical Laboratory, also at Deepwater Point, as assistant laboratory director.

On August 1, 1946, he was appointed assistant director of domestic sales of the Dyestuffs Division, and in February of 1949 became director of sales of the Fine Chemicals Division. Dr Dahlen was made director of sales for the Dyestuffs Division on December 1, 1951. In May, 1952, when the Fine Chemicals Division and the Dyestuffs Division were combined to form the Dyes and Chemicals Division, he was named director of sales for this new division.

He was transferred to the Technical Division as adviser for dyes, intermediates and related chemicals, in January, 1955.

Miles A Dahlen

Dr Dahlen was born January 4, 1904, at St Paul, Minn. He received a bachelor of science degree in chemical engineering from the University of Minnesota in 1924, and a doctor of philosophy in organic chemistry from the same institution in 1928.

In June, 1928, he married Marion C L Boyne, of Stillwater, Minn, and they have three sons: Miles Boyne, Dean Magnus and Rolf John. Dr and Mrs Dahlen live at 309 Milton Drive, Wilmington, Del.

Dr Dahlen has written numerous articles for technical journals, and a number of patents have been granted on his inventions in the chemical field. He was a consultant to the U S Army, and a member of a technical intelligence mission to the European Theatre of Operations from July to November of 1945.

Dr Dahlen has also served as director of the Textile Research Institute, Inc, and chairman of the Delaware Section of the American Chemical Society. He is member of the Executive Committee on Research of the AATCC, and a director of the Wilmington Sales Executives Club.

Previous winners of the Olney Medal, established in 1944, were: 1944 — Louis A Olney; 1945 — Milton Harris; 1946 — William H Cady; 1947 — Edward R Schwarz; 1948—Harold M Chase; 1949—Charles A Siebert; 1950 — George L Royer; 1951 — Raymond W Jacoby; 1952 — Werner von Bergen; 1953 — Roland E Derby; 1954 — William D Appel.

The Olney Medal recipient is selected each year by a five-man committee whose members include the president of the AATCC, a member of the faculty of an educational institution awarding degrees in chemistry, an employee of a concern manufacturing products used in textile wet-processing, an employee of a firm manufacturing textiles, and a member at large of the AATCC.

Members of the Olney Award Committee this year are: Raymond W Jacoby, Ciba Co, Inc, president of AATCC; Percival Theel, coordinator of research, Philadelphia Textile Institute; Paul L Meunier, manager, sales development, dyestuffs, E I du Pont de Nemours & Co, Inc; Harley Y Jennings, director of research, Dan River Mills; Walter M Scott, assistant director, utilization research, U S Department of Agriculture, Washington, D C.

The actual award of the Medal will be made to Dr Dahlen at the Olney Award Luncheon during the AATCC Convention, September 22, 1955, at the Chalfonte-Haddon Hall Hotel, Atlantic City, N J.

Membership Applications

June 10, 1955

SENIOR

Roman J Godunsky—Asst colorist, Cravart Inc, Paterson, N J (NY). Sponsors: H Betz, E J Grady.

Harold A McCleery—Manager, King Philip Finishing Co, Lonsdale, R I (RI). Sponsors: J J Dillon, J Moore.

Edward M Roth, Jr—Sales rep, Becco Chemical Division, Food Machinery & Chemical Corp, New York, N Y (NY). Sponsors: J F Shea, B K Easton.

Raymond E Roy—Research chemist, Pacific Mills, Lawrence, Mass (NNE). Sponsors: C B Rowntree, G Cohen.

William L Szabo—Asst dyer, Fonda Glove Lining Co, Fonda, N Y (NY). Sponsors: E A Chevrette, A J Rooney.

Emil G Wiest—Chief supervisor, analytical control, E I du Pont de Nemours & Co, Inc, Deepwater, N J (Pied). Sponsors: C K Black, C A Sylvester.

ASSOCIATE

George R Hodgins—Director of res & product development, Litho Chemical & Supply Co, Lynbrook, N Y (NY).

Joseph E Sanders, Jr—Finish chemist, Chemstrand Corp, Pensacola, Fla (SE).

James G Wylie—Lab asst, E I du Pont de Nemours & Co, Inc, Atlanta, Ga (SE). Sponsors: W F Crayton, L A Burrough.

STUDENT

Ryoichi Murase—Textile Res Institute of Japanese Govt.

CORPORATE

Botany Mills, Inc
Courtaulds (Alabama), Inc
International Salt Company, Inc
Metro Atlantic, Inc
Wyandotte Chemicals Corp

APPLICATION FOR TRANSFER TO SENIOR MEMBERSHIP

Lawton W Cleveland, Jr
Edward J Elliott
Richard C Sharpe

Minutes——

ONE HUNDRED AND NINETY-SIXTH COUNCIL MEETING

THE Council held its 196th meeting in the Hotel Dennis, Atlantic City, N J, on Friday morning, April 29, 1955. Present were: President Raymond W Jacoby, presiding; George L Baxter, Joseph H Jones, George O Linberg and Walter M Scott, vice presidents; Albert E Sampson, treasurer; Leonard S Little, chairman of the Executive Committee on Research; Carl Z Draves, Thomas R Smith and P J Wood, past presidents; Ernest J Chornyei and Thorwald Larson representing Rhode Island; Rudolph C Geering representing Western New England; Bernard K Easton representing Niagara Frontier; Albert E Herrmann, Jr and Irwin J Smith representing Hudson-Mohawk; Robert C Allison, Matthew J Babey, William F Brommelsiek, John H Hennessey, Patrick J Kennedy and Donald E Marnon representing New York; Carleton T Anderson, Arthur W Etchells, Richard A Shimp, Frederick V Traut, Percival Theel and Jackson A Woodruff representing Philadelphia; Lawrence L Heffner representing Washington; Harley Y Jennings and R Hobart Souther representing Piedmont; Arthur I Hultberg representing Mid-West; Hubert A DesMarais representing Pacific Northwest; James A Doyle of the Publicity Committee; William A Holst of the Committee on Constitution and Bylaws; Albert E Johnson of the Corporate Membership Committee; Harvey G Gendreau, Charles A Whitehead and Herman E Wilde; and Harold C Chapin and Richard R Frey of the secretary's office.

The secretary's report of the 195th Council meeting and financial report of March 31, and the treasurer's report of April 8, were accepted. Speaking for the Appropriations Committee, the treasurer requested data on all requests for funds to be presented in the budget at the June Council meeting. He received approval for switching of investments by the Committee up to the amount of $85,000, should occasion arise before the June Council meeting.

As requested at the January Council meeting, the Appropriations Committee drew up recommendations that the second and third paragraph of Bylaw Article X, Section 4, be amended to read as follows:

"In any year beginning May first a Section may request reimbursement for certain expenses incurred by the Section in the year ended on that date. Such request shall include an itemized statement of these expenses, which may include the expense of postage, printing and stationery not exceeding seventy cents per each Senior, Junior or Associate member of the Section with dues fully paid on that May first; and may also include any further expenses, of technical meetings only, not exceeding thirty-five dollars per meeting. On receipt of two copies of the request, signed by the Chairman and Treasurer of the Section, the Secretary of the Association shall issue a voucher, and forward with one of these copies for payment, in the usual manner, of the amount requested; provided that the total of the reimbursement to a Section for one year shall not exceed one dollar and fifty cents per each Senior, Junior or Associate member with dues fully paid on said May first.

"For the expenses of a newly organized and accepted Section up to its initial May first, the Council may at its discretion appropriate amounts not exceeding a total of one hundred dollars; but this shall not prevent any subsequent reimbursements as provided in the preceding paragraph."

Confirming new duties assigned the vice presidents in the January Council meeting, the Committee on Constitution and Bylaws recommended that the following new Section 3 be added to Article III of the Bylaws, and that present Sections 3, 4, and 5 be renumbered 4, 5, and 6, respectively.

"In addition to such duties as may be assigned under Section 2, each Vice-President shall be a Vice-Chairman of the Corporate Membership Committee and a member of the Committee on Membership and Local Sections. He shall report at each Council meeting on activities in his Region."

To conform with dues changes already effected, the Committee on Constitution and Bylaws recommended that the second half of Section 6, Article II, of the Bylaws, beginning "During a later year a former member may be reinstated, etc," be changed to read:

"During a later year a former member may be reinstated by vote of the Council after he has paid current dues and discharged all previous indebtedness to the Association. To discharge indebtedness for unpaid dues of a previous year, a member applying for reinstatement before May first shall pay two dollars in addition to regular dues for the year of reinstatement. After May first the discharge of such indebtedness combined with dues for the remainder of that year shall be $8.00 for Senior or Associate membership, $5.00 for Junior, and $3.50 for Student. A member who resigned in good standing may be reinstated with the dues privileges accorded a new member in Section 4 of this Article."

These three proposals were approved by the meeting, and subsequently adopted by letter ballot of the Council.

Reporting for the President's Advisory Committee, Mr Linberg reported appointment of J A Woodruff in place of C N Rabold, resigned. The Committee had approved the three Bylaw proposals. It recommended, and the Council approved, an Inter-Society Relations Committee, and a committee to help Sections in planning their technical programs, both to be appointed by the president.

The vice presidents reported on meetings in their Regions, Mr Baxter particularly on meetings of the Hudson-Mohawk and Niagara Frontier Sections, Mr Jones on the Mid-West Section in Cincinnati, Dr Scott on the Southeastern in Lindale, Ga, and Mr Linberg on a meeting for students in Kingston, Rhode Island and the annual meeting arranged by students for the Northern New England Section in Lowell. Mr Traut described a well-attended course of eight lectures arranged by the Philadelphia Section at Philadelphia Textile Institute.

Mr Little emphasized the need of more funds for research and Mr Johnson reported progress in his campaign for increasing income. The Corporate Membership Committee now consists of:

A E Johnson, *chairman* — W B Amos, J Anderson, E A Chevrette, A A Curt, J L Eich, R R Frey, C Hooper, J G Kern, E A Leonard, J R Nehmens, W M Segall, R A

Shimp, R B Taylorson, J M Washburn, Jr.

Mr Doyle reported a meeting of press representatives to start the corporate membership drive, and further publicity planned in a series of newsletters. He requested that all local publicity be cleared through members of his Publicity Committee, now consisting of:

J A Doyle, *chairman;* T R Scanlan, Jr, *vice-chairman* — R V Dugdale, J C Fonville, M R Hallinan, A N Henschel, K A Howry, A E Johnson, E R Kaswell, J G Kelley, D S Lyle, T M Marshall, J J McGuinness, N W Pratt, J O Sweitzer, A R Thompson.

Professor Theel asked that all papers for publication be sent direct to Mr Whitehead, managing editor of *American Dyestuff Reporter,* under a plan for earlier printing with only selected papers edited by Dr Draves. Research subcommittees were urged to keep Association membership acquainted with their work through reports for publication. Membership of the Publications Committee was increased by appointment of J H Jones and E W Lawrence.

Mr Holst reported substantial progress on proof correction for the *Colour Index* and Mr Sampson, on plans for binding and marketing in the spring of 1956.

Mr Traut outlined the program for the Atlantic City Convention of September 22 to 24, 1955. The Technical Program Committee now consists of:

A W Etchells, *chairman* — M H Klein, P Theel, S G Turnbull, Jr, G G Wunsch.

For the Conventions Committee, Mr Linberg reported appointment of a committee headed by E A Leonard to organize the special activities of our Association during the Perkin Centennial. The question was raised whether we should hold our own banquet on Saturday or perhaps Thursday evening. Plans were settled for Boston in 1957 and Chicago in 1958. Invitations had been received from Washington for 1959 and Los Angeles for 1960.

Presented by Mr Baxter for the Committee on Membership and Local Sections, each of the following was elected to the class of membership specified.

CORPORATE

The Felters Co, Diamond Crystal Salt Co, Hart Products Corp, Industrial Schwarz, S A, Mac Chemical Co, Morgan Dyeing & Bleaching Co, Inc, National Institute of Drycleaning, Pawtuxet Valley Dyeing Co, Inc, Progressive Color & Chemical Co.

SENIOR

A Alexander, M C Alexander, F W Arbusto, A C Baggenstoss, L E Bass, J W Benefield, A A Bevino, D E Boland, G F Boswell, J L Borstelmann, G Boyko, H L Brewer, L M Brown, H L Cardwell, A I Celmins, A Chwala, J Compton, W G Clarke, J Conn, R C Cottrell, A W Curiel, R R Currier, C D Curtis, J Czimcharo, D M Davidson, R K Edman, L F Faragalli, J D Farrell, R C Gagnon, E S Griswold, O J Goldstein, L Goodman, J N Growney, N R Hall, R H Harm, F Hauser, R A Herndon, L R Hubbard, A W Hunter, J A Hutchinson, J M Jellinek, H S Kalpagian, E S Kandibo, F A Kerwin, C J Koch, V Kota, L Kritzer, J Leigh, W R Leverenz, R J Lincoln, J L Luckman, J F Mangum, M M Mattini, M J Maura, T S McCoy, W G McGuigan, J N Money, H Naidus, T E Nestler, C L Ogletree, W C Parker, F diE Pedrani, J A Piepmeyer, F A Pistone, P D Plambeck, B L Reers, P V Ricciardi, C P Richkus, C N Robertson, III, E B Schultz, H J E Segrave, T A Sheets, Sr, H Shenker, D W Spaulding, S L Sperber, C Spinner, L N Stanley, N F Stevenson, J J Surash, C T Sutherland, G M Swartzwelder, Jr, T M Swoyer, E M Taft, Jr, P R Tamblin, E M Tennis, A M Timmerman, P R Tuttle, G P Vincent, V J Vincent, Jr, C F Wagner, R Welsh, Jr, J T Wigington, Jr, W M Wisnia.

JUNIOR

C W Braswell, J C Childress, E M Cornell, R A Gifford, F A Hirsch, J P B Mengel, G L Morgan, B E Nagel, P Verga.

ASSOCIATE

C D Balser, E P Bangs, M K Chevli, N E Clay, E J Dowd, W E Emond, Jr, U Ferraz, E J Finan, W V Fox, V M Hagenlocher, J G Hecker, Jr, R C Hoffmann, G M Hopkins, R L Howard, M L Joseph, C H Lumpkin, O D Marc-Aurele, J R McGinley, E T Ming, G S Mott, W R Newman, L J Prucino, R Rubin, B L Schroder, H D Shapley, H W Venable, J B Weiser, G R Wood.

STUDENT

R B Allen, Jr, V C Braun, P S Bookbinder, P K Chheda, E W Costa, G M Brown, L L Bryant, D E Dorsey, B A Dube, R H Gendreau, W S Hart, J W Hornby, J J Hrinko, J P Italiano, C E Kirkpatrick, Jr, H Lutjens, L B Martins, P F McCann, B F McNally, P E Norton, R Oliveira, R T Oliveira, W H Pedrick, W Perry, H J Riley, W F Ritz, N M Sabbagh, G R Schmoke, Jr, F V Shea, H Schreiber, K Siavoshi, L F Simard, B A Staron, J Tavares, J R Wagner, H M Zins.

TRANSFERRED FROM OTHER CLASSIFICATIONS TO SENIOR

W E Aldrich, R H Carlson, M W Chappell, W C Comer, Jr, T R Commerford, J F Crvarich, R W Evans, C G Fleisher, J L Foy, I W Fricke, A Ginsburg, A W Grunberg, C W Heath, S J Hersh, E J Khoury, R T King, A H Lightkep, J R Lindstrom, J E Miller, K Moses, A D Nacht, H H Noon, R A Olney, L Rebenfeld, T J Reilly, J M Privette, H Rosenfeld, A Saltiel, A C Scache, R A Schoellhorn, R L Ward, J I Weierman.

Respectfully submitted,

H C CHAPIN
Secretary

SECRETARY'S FINANCIAL REPORT — March 31, 1955

	Applications	*Dues, regular & reinstate*	*Dues, Corporate & Sustaining*	*Miscellaneous*	*Totals*
Received & transmitted to Treasurer August 1 to December 31, 1954	2558.00	48463.50	28570.00	9878.95	89470.45
December 31, 1954 to March 31, 1955	1220.50	12125.00	17162.50	3738.15*	34246.15
Total in fiscal year to March 31,	3778.50	60588.50	45732.50	13617.10	123716.60
Leaving deposited by Treasurer with Secretary,					1807.18
For comparison, receipts to March 31, 1954,	3389.00	45022.25	46482.50	24332.77	119226.52

* Miscellaneous items,

Reporters and reprints,	289.20
Launder-Ometer royalties,	105.00
Year Books,	563.10
Crockmeters,	1053.19
Crock cloth, commissions,	77.28
Multifiber cloth, commissions,	257.60
Moth cloth, commissions,	15.00
Water test apparatus,	284.40
Dyed standards,	32.00
Knitted tubing,	20.80
Buttons,	5.00
Color transfer charts,	324.85
Flammability blueprints,	1.00
Analytical Methods,	10.00
Application of Vat Dyes,	256.00
Cotton skeins, commissions,	15.50
Standard grease wool,	9.00
Accelerotor liners,	315.00
Grey scales,	88.00
Perkin Centennial expense repaid,	73.23
	3734.15
Net charges over receipts, gas fading units,	—27.00
	3707.15

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Contribution——

EXPERIMENTAL APPLICATION OF A TURBODYNAMIC PRINCIPLE IN DYEING

D FORNELLI

Sesacolor SA
Milan, Italy

A new experimental dyeing machine is described, which permits dyeing at temperatures below the boil and at normal pressure by the application of a turbodynamic principle.

In dyeing felts or other materials that are most difficult to penetrate perfect penetration is obtained because of cyclonic turbulence in the dyeing box.

The advantages found in laboratory tests compared with the usual pot dyeing are described. A brief account of the possible development of this new principle is given.

INTRODUCTION

THE first phase of dyeing consists in the formation of a layer saturated with dye on the fiber surface, followed by diffusion into the fiber, depending on the length of the process and the temperature at which it is carried out. Mechanical and thermal factors therefore influence exhaustion.

The idea that a mechanical factor, turbulence of the dyeing liquor, greatly assists penetration and levelness is fairly old. Agitation increases diffusion and the achievement of dyeing equilibrium*(1)*. A study of the effect of agitation in wool dyeing has recently been made under laboratory conditions and has shown the variations in the amounts of dye adsorbed*(2)*.

An experimental demonstration showing the increased diffusion obtained by mechanical agitation in comparison with that obtained by ultrasonics has also been made recently*(3)*.

It is a fact that, in obtaining exhaustion and leveling, the factors of bubbling and turbulence of the liquor have the same importance as the high temperature of a normal dyebath at the boiling point. This is an idea which was first developed in the laboratories of ICI*(4)*. This knowledge was obtained from experimental work dating back to 1934, which began with a study of dyeing at reduced pressure and was followed by a study of air bubbling.

At the boil under reduced pressure, steam bubbles are formed in the dyebath. Instead of using reduced pressure in special machines, it was proposed to force air bubbles into the hot dye liquor at normal pressure and therefore in normally constructed dyeing vessels. Both these techniques enabled excellent dyeings to be obtained experimentally in a shorter time at 140-158°F (60-70°C). Large scale dyeing machines using reduced pressure were then developed*(5)*, but their cost remained a drawback to wide adoption.

In practice, the air-bubbling technique led to irregular results. A further objection to the air technique was that of undue felting action, actually avoided by working at reduced pressure.

D Fornelli

It is admitted that the aggregation of the dyestuff particles in large agglomerates is decreased or prevented by the agitation of the dyebath and that, by increasing the turbulence of the dyebath, exhaustion takes place at a temperature below the optimum necessary for a normally agitated bath. The results obtained experimentally with the air-bubbling technique showed that perfect penetration and exhaustion were achievable at temperatures around 140-158°F (60-70°C).

The author thought it would be interesting to develop an experimental machine of novel design in which maximum turbulence was obtained. He therefore developed the idea of provoking a reversed dynamic fluid movement of the dyeing liquor through the material. This result was achieved by fitting baffles in the box of a centrifuge, which also constituted the dyeing box, while the revolving cage served to hold the material.

The purpose of this was to study the influence of this turbodynamic effect on the dyeing of various materials, particularly those where penetration is very difficult to obtain, namely felts.

EXPERIMENTAL

DESCRIPTION OF MACHINE——
A photograph of the experimental turbodynamic dyeing machine is given in Fig 1. It consists of a perforated cylindrical cage A revolving in a circular box B containing the dyebath and shaped with deflectors designed to project the centrifuged internal liquor in a direction contrary to that of the rotation of the perforated cage, which holds the material. A cover fixes and closes the machine hermetically. The machine is fitted with a thermometer C, and expansion tube E, a feeding tank F, and is electrically heated by means of two resistances G fitted into the deflectors. The maximum temperature reached during experiments was 167-176°F (75-80°C).

The cage holding the material is driven by a ⅛-HP motor and, when dipped in the dyebath, revolves at a speed of 1000 rpm. In a first model made of iron lined with acid-resisting varnish, the shape of the deflectors was different from those in a second model, which was made of copper.

Although, given the proportions of the machine, the shape and number of the deflectors did not turn out to be deciding factors governing the degree of turbulence obtained, it was noticed that more turbulence seemed to be achieved in the copper model, in which the angle of the deflectors was less pronounced, and thus a dead vortex point in the lateral side of the deflector was avoided.

The maximum volume of the dyebath in the two models was 600 and 500 ml, respectively.

A schematic representation of the machine is given in Fig 2. It shows the dynamic direction of the liquor currents with evidence of the reversed dynamic effect caused by the deflectors. The material, which is made up of rectangular-shaped pieces of different felts or fabrics,

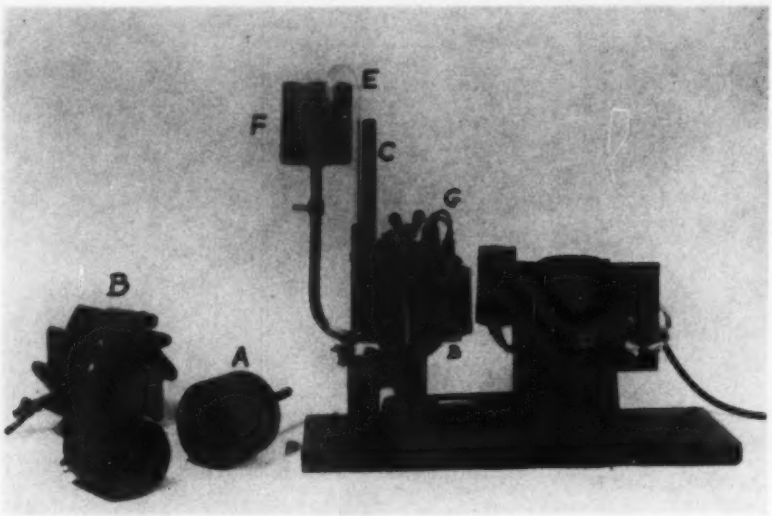

Figure 1
Experimental turbodynamic dyeing machine

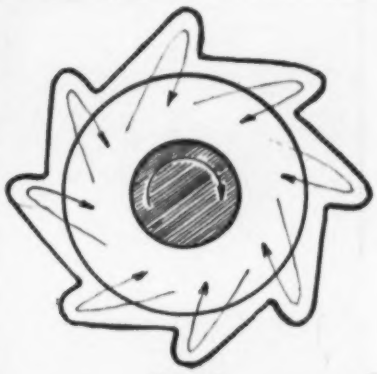

Figure 2
Schematic section of the experimental turbodynamic dyeing machine showing the reversed dynamic effect due to deflectors

is packed in the perforated cage against the walls and when, the dyeing box having been filled with the dyebath, the cage starts to revolve, it at once becomes the center of a mass of highly agitated dyestuff solution, which provokes diffusion of the latter into the intimate structure of the material within a few seconds.

EXPERIMENTS———Fig 3 and 4 reproduce cross sections showing the degree of penetration obtained in dyeing a material of great thickness according to this turbodynamic technique.

The material chosen for the experiments was a felted wool fabric used for industrial purposes with a thickness of about 2.5 millimeters. It was cut into rectangular-shaped samples weighing 13 g each and placed in the dyeing cage. A blank dyebath was added, consisting of water at 122-140°F (50-60°C) plus the right percentages of a wetting agent, sodium sulfate and sulfuric acid; afterwards the machine was set in motion. After two minutes the motor was shut off and the concentrated dyestuff solution was added through the feeding tank; to assist mixing of the dyestuff solution in the dyeing box, the revolving cage was turned by hand. When the dyestuff had entered the dyeing box, the motor was restarted, the temperature was raised to 158°F (70°C) within a few minutes and was maintained at this level until the dyestuff solution showed exhaustion and became clear, as was noticed from the expansion tube in which it was reaching a certain level because of the increase of pressure and turbulence of the dyebath.

The cross section A in Fig 3 corresponds to a dyeing of the above-mentioned material carried out in a pot for 2½ hours at the boil (reached gradually in 30 minutes) with 4.5% Solway Ultra Blue BS in the presence of 3% nonionic wetting agent, 3% sulfuric acid and 20% sodium sulfate at a bath ratio of 50:1. Cross section B in the same figure shows a sample dyed according to the same recipe in the experimental turbodynamic dyeing machine at a bath ratio of 40:1 for 15 minutes at a temperature of 158°F (70°C). The material was treated for two minutes with a blank bath containing the wetting agent, sulfuric acid and sodium sulfate and water, dyestuff was added and the machine was run for approximately 15 minutes at 158°F (70°C). After this time, perfect penetration was found to have been achieved, while the pot-dyeing sample as shown in cross section A was not fully penetrated even after a very much longer time at the boil. Fig 4 shows a cross section of sample A dyed in the pot in 2 hour's boiling with 3% Solway Blue BNS (CI 1054), 2.5% Lissamine Fast Yellow 2GS (CI 639), 3% nonionic wetting agent, 3% sulfuric acid, and 20% sodium sulfate.

Sample B was dyed in the experimental turbodynamic dyeing machine for 30 minutes at 158°F (70°C).

An outstanding degree of penetration was obtained with the experimental machine and the dyeing time was decreased, while the temperature was maintained at a level well below the boil and the pressure was normal.

DISCUSSION OF RESULTS

From the above dyeing results, the advantages obtained by the use of a turbodynamic dyeing machine might be summarized as follows:

1) outstanding penetration of the material,
2) reduction of length of dyeing process,
3) dyeing achieved at a temperature below the boiling point.

Since dyeing on wool materials, as distinct from felts or other fabrics, showed an undue degree of felting, it is considered that, although now applied only in a laboratory instrument, which could find use as a felt dyeing machine for matching purposes, the idea could be developed for large-scale felt dyeing, provided mechanical difficulties could be overcome. A laboratory felt-dyeing machine developed for obtaining better penetration, in which the felt was placed in a cage revolving in the dyebath, has recently been described(6).

With a turbodynamic dyeing machine the possibility of dyeing felts at temperatures below the boil could be realized, and this practice could be considered a sound one for this quality of material(7). The degree of penetration that can be obtained might permit the dyeing of felts of a maximum degree of hardness with preservation of quality, provided suitable holders could be developed.

As proof of the degree of penetration obtained, the author has dyed samples of cotton duck in 30 minutes of dyeing at 158°F (70°C) in the experimental machine with direct dyestuff achieving an excellent penetration, while, by the normal process in a pot at temperatures near boiling at normal pressure, this is most difficult, if not impossible.

The fastness of the material dyed in the experimental machine was found to be excellent.

An indication that the degree of turbulence is exceptionally high is indicated by its action on the solubility of dyestuffs. The cross section B of Fig 3 reproduces the sample dyed with Solway Ultra Blue

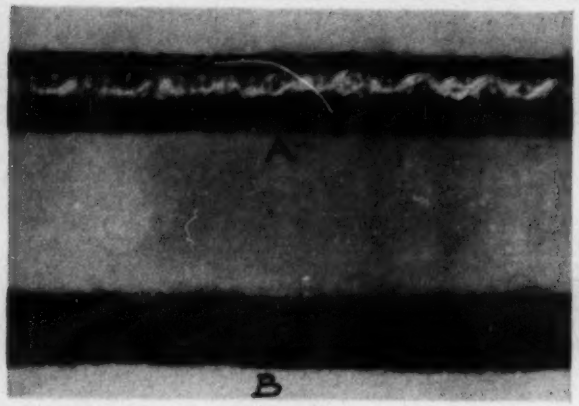

Figure 3
Cross section of felt dyed with 4.5% Solway Ultra Blue BS
Sample A—pot dyed for 2½ hr at the boil
Sample B—dyed in the experimental turbodynamic dyeing machine for 15 min at 158°F (70°C)

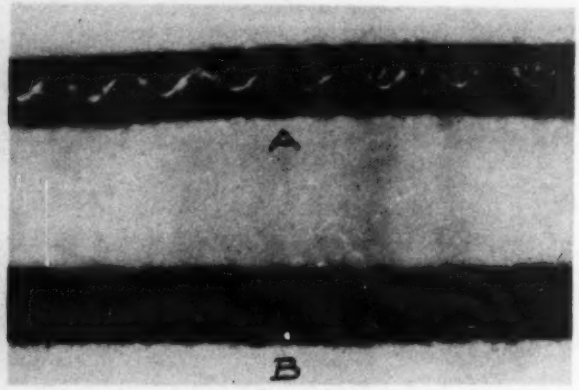

Figure 4
Cross section of felt dyed with 3% Solway Blue BNS, 2.5% Lissamine Fast Yellow 2GS
Sample A—pot dyed for 2 hr at the boil
Sample B—dyed in the experimental turbodynamic machine for 30 min at 158°F (70°C)

BS at 158°F (70°C). This means that a perfect dyeing was achieved at this temperature with a dyestuff considered to dye very patchily unless the dyeing liquor is boiled.

CONCLUSION

Some evidence has been obtained in the dyeing of wool felts with an experimental machine of novel design based on a turbodynamic principle that an outstanding degree of penetration and exhaustion is obtainable in dyeing at temperatures below the boil at normal pressure and in a very short time. Equal results cannot be produced by dyeing the same material in a pot for a prolonged time at a boiling temperature. Although it is to be expected that mechanical difficulties will arise in the practical development of this machine for large-scale use, the author feels that the idea, apart from its interest in the laboratory, might prove useful for further application and development*(8)*.

ACKNOWLEDGMENT

The author wishes to thank W J Marshall for helpful criticism of this paper. Thanks are due also to A G Cuthbert-Smith for information, to Imperial Chemical Industries Ltd for having prepared cross-sectional photographs, to E Bocchio, and to the Lanificio Bona-Caselle, where the experimental part of this work has been done.

REFERENCES

(1) Vickerstaff, T, "The Physical Chemistry of Dyeing", p144, Oliver and Boyd, London (1954).
(2) Northern New England Section, AATCC, *Am Dyestuff Reptr* 40, P851 (1951).
(3) Alexander, P, and Meek, G A, *Textilber* 34, 57 (1953).
(4) ICI, Ltd, BP 436,875 (1934) and BP 441,660 (1935).
(5) Fontana, Lanfranconi, FP 865,783.
(6) Tucker, H C, *Am Dyestuff Reptr* 37, P483 (1948).
(7) Haigh, D, *J Soc Dyers Colourists* 70, 539 (1954).
(8) Fornelli, D, pending patent.

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DYEING AND FINISHING SYNTHETIC TUBULAR KNIT GOODS*

RUDOLPH C GEERING

Princeton Knitting Mills
Watertown, Conn

The author presents a flow sheet of the procedures followed in processing synthetic tubular knit goods from the grey room to the final finishing of dyed or printed materials. The purposes, principles, and equipment for carrying out the various steps are explained.

INTRODUCTION

WHEN I was approached to speak about the finishing of tubular knit goods at this Symposium I was very much in doubt how to treat a subject of such magnitude in the limited time allowed. I asked myself this question, "What are outsiders most interested to know about our operation?"

When visitors come to our mill, we ask them the same question, and we usually end up by giving them a tour through our plant. This is exactly what I shall attempt to do here today.

Before we start on our tour I would like to present Figure 1, which shows the flow of operations and which will serve as a guide.

PROCESSING SYNTHETIC TUBULAR KNIT GOODS

GREYROOM———The goods are received in the finishing plant rolled up in rolls of 50- to 120-yard pieces. They enter the grey room, where they are made up into dye lots or transferred to grey stock and stored until finishing instructions are received. This is where the customers' requests are translated into work orders, so that each piece and each dye lot has the proper instructions for the finishing procedures. These instructions can be executed in the form of code or in detailed description of the procedures, whichever is most convenient and efficient. Of course, utmost accuracy is of great importance as a small error in the grey room can cause the mill a great deal of expense and grief.

The goods are divided into two categories. Fabrics containing high percentages of wool are sent to the fulling room, all others enter directly into the dyehouse proper.

FULLING———In the fulling room the goods are first wetted out in a mangle with a solution of soap or synthetic detergent, soda ash and tetrasodium pyrophosphate (TSPP). They are then loaded onto the fulling mills. In this operation the cloth is allowed to shrink to certain predetermined dimensions, which are checked from time to time with the measure wheel. While the wool fiber is felting, the openings in the fabric are gradually covered by the interlacing wool fibers. The goods obtain what we call the proper "cover." Fulling is stopped before the desired weight is obtained in order to allow for a certain unavoidable fulling action in scouring and dyeing. The pieces are then transferred to the washer, where they are scoured for 15-30 minutes at 110°F and thoroughly rinsed before they are allowed to enter the dyehouse. This rinsing is usually carried out with softened water at 100°F. The pH of the goods should be as close to 7 as possible before they are taken off the washer, and the use of soft water is of great importance—especially if soap has been used for fulling—for the avoidance of the precipitation of metallic soaps on the fiber. Frequent analysis of the scoured cloth for soap and fat content is advisable in order to keep track of proper scouring and rinsing and to assure satisfactory performance in dyeing. In general, alcohol and ether extractions should not exceed ¼ of one percent.

PRESETTING———Goods other than wool blends are either loaded directly on the dyebox or they are preset. Especially with thermoplastic fibers it has proven beneficial to allow the fabric to relax and shrink evenly before loading on the dyebox. This operation is called presetting and is accomplished by a hot-water or steam treatment. The object is to prevent creasing and crackage later on in dyeing. The course of procedure must be studied and worked out for each construction. Hot-water setting, which consists of treatment in a tank with boiling water followed by a cold-water spray, is carried out on the setting machine. The goods must be fed by means of a tubular spreader in order to avoid any wrinkles.

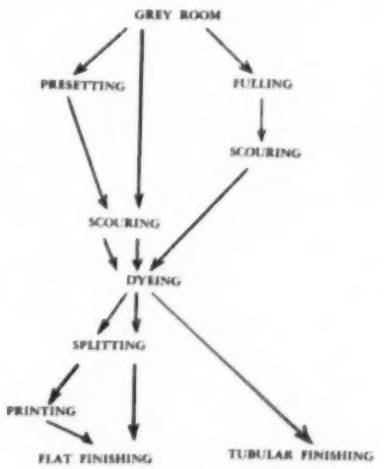


Figure 1
Flow sheet for processing tubular knit goods

* Presented before a Symposium on Dyeing and Finishing, Group I, Knit Goods, held at the Philadelphia Textile Institute, Philadelphia, Pa, on Saturday morning, Oct 30, 1954, with Virgil T Hartquist presiding.

Some of the acrylic fabrics and blends are relaxed by steaming on the Tubetex Calender prior to dyeing.

SCOURING AND DYEING——The scouring and dyeing is usually done on dyeboxes. The oval-reel type of dyebox is satisfactory for synthetics and blends, while the round reel with deep tub is preferred for fabrics containing a high percentage of wool. There is less friction in these deep tubs and the fulling action is minimized. This is important in the cases of abnormally prolonged dyeing times, which can be caused by difficulties in shade matching or problems with leveling.

The problem of level dyeing is a very important one with tubular knit goods. The fabrics have a strong tendency to cling together, and certain qualities distort and crease easily. Every precaution must therefore be taken to favor and assure level dyeing. Great care is used in selecting the most level-dyeing dyestuffs. Since rigid fastness standards have to be maintained at the same time, it is not always an easy matter to find the most suitable colors for both level dyeing and fastness properties. In spite of the efforts made by the dyestuff companies to rate their products, a great deal of experimentation is left to the dyer in selecting the most useful products. Dispersing agents and penetrants are helpful but only if they do not foam excessively, as foaming can cause floating of the fabric, which in turn causes uneven dyeing.

The goods are loaded onto dyeboxes charged with scouring agents in water at room temperature. For certain qualities it is preferable to load onto empty boxes and then to prepare the scouring bath. The two ends of each piece are sewed together in tubular form on a sewing machine, and great care is taken to avoid any creases in the seam in order to avoid crease formation on the goods during dyeing. The scouring bath usually contains an anionic or nonionic detergent and TSPP. The goods are allowed to wet out during 10 to 15 minutes' running before the temperature is raised. In certain cases it is possible to scour and dye in one operation, but only if the cloth coming from the knitting mill is very clean and if the shade is not sensitive to alkali. The goods are rarely bleached. As a rule, a satisfactory white is obtained by dyeing with fluorescent whitening agents.

With the appearance of all the new synthetic fibers and blends the actual dyeing has become very complex and intricate and is too involved a subject to discuss in detail at this time. The problems are very much the same as in the dyeing of woven piece goods, perhaps with the exception of the problem of level dyeing, which is extremely difficult.

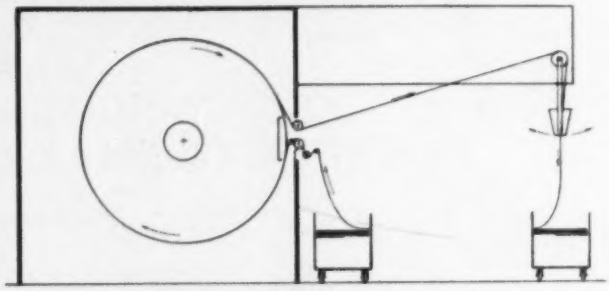


Figure 2
Proctor drum dryer

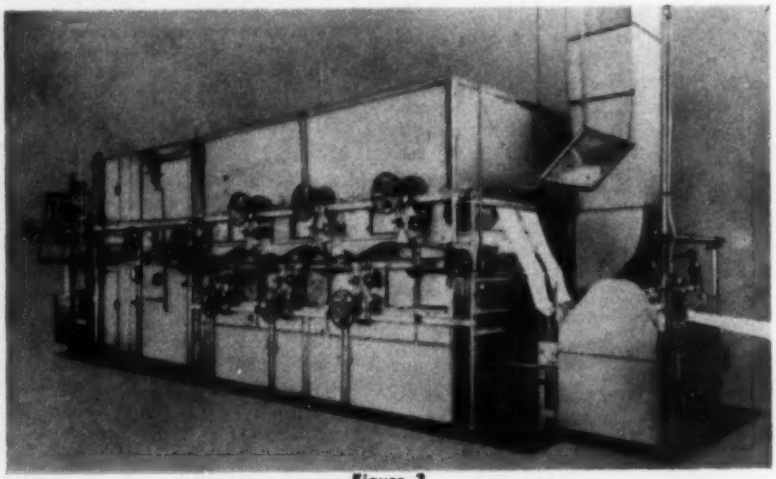
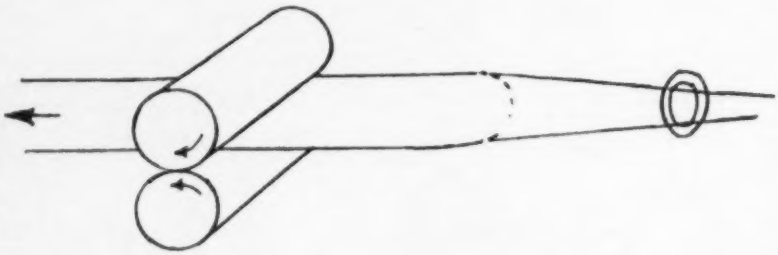


Figure 3
Tubetex dryer



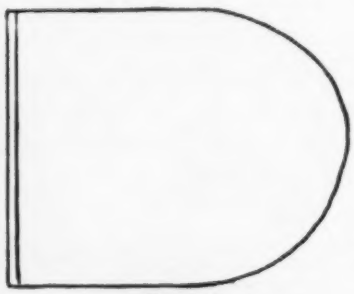


Figure 4
Tubular spreader

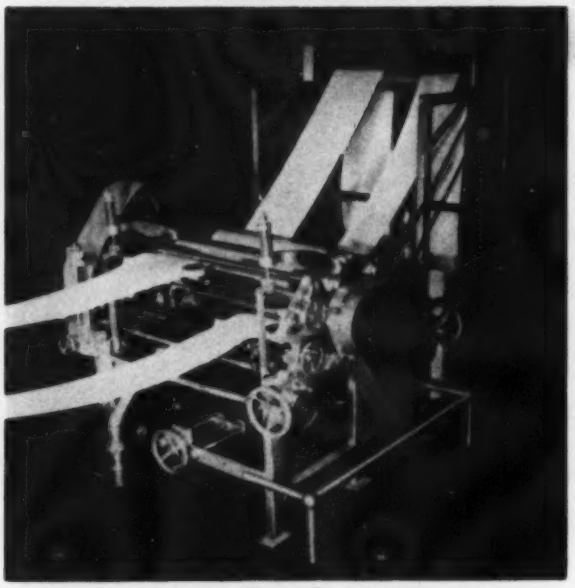


Figure 5
Tubetex spreading and extracting machine

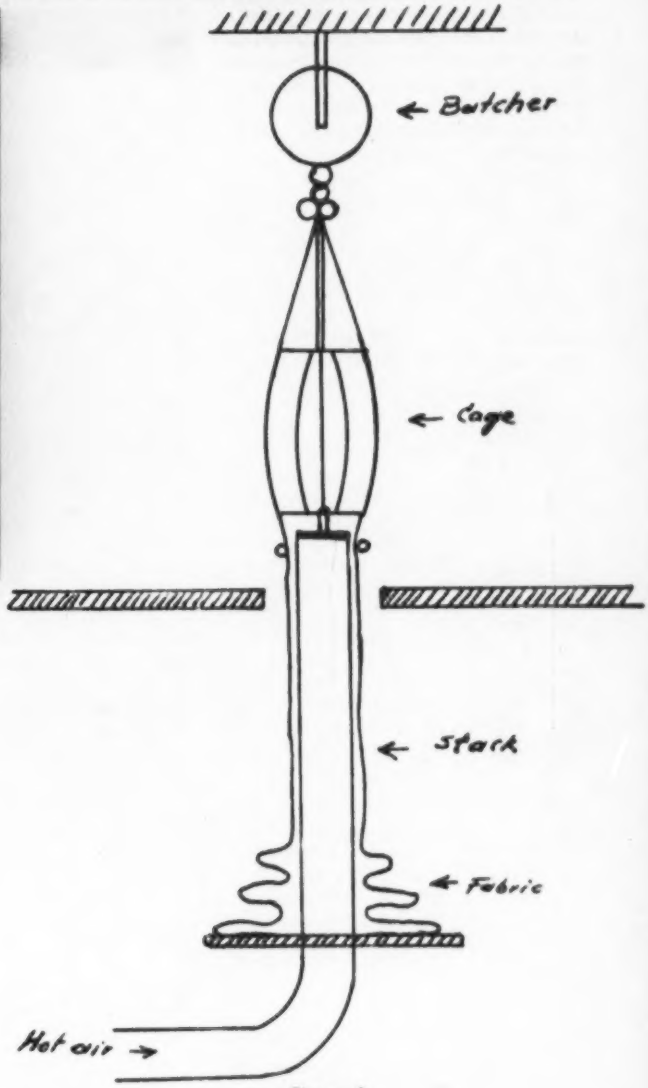


Figure 6
Stack dryer

FINISHING———Finishes are preferably applied on tubular goods from the dyebox, especially if the fabric is to be marketed in tubular form. Tubular goods can also be padded, but only in cases where an excess of finish in the creases does no harm. As the liquor ratio in the dyebox is large, 1:20 to 1:40, finishes are selected that exhaust readily. There are a great variety of finishes used, such as softeners, stiffeners, scroop, waterproofs, antistatic agents, slipproofs and resins. The goods are run at a suitable temperature until the finish is exhausted or the desired degree of exhaustion is accomplished. They are then removed from the dyebox and extracted in a centrifuge or squeezed out in a mangle. Fabrics that are subject to crush marks are best extracted in a centrifuge for a very short cycle or are squeezed in a mangle. The goods are then dried in a regular loop dryer, on a drum dryer, or in the Tubetex dryer. On the drum dryer (Fig 2) the goods travel around a perforated drum 9 feet in diameter. They are held on the drum by a cotton blanket, which runs with the piece, and by the hot air which is sucked from the outside to the inside of the drum. The drying takes only ½ to 2 minutes depending on the weight of the fabric and the amount of water to be removed. In the Tubetex dryer (Fig 3) the fabric is run between nozzles and 6 air-pervious reels or cylinders. Opposite sides of the fabric are alternately exposed to the nozzles transmitting high-velocity air. The cylinders are automatically driven with variable speed by means of compensator rolls. This permits practically tension-free drying.

The goods coming from the dyebox or centrifuge are usually twisted and roped and must be straightened out and opened before they enter the dryers. This is accomplished mechanically on the detwister or by folding the goods into a truck or scray from which they enter the dryer. Several devices have been developed for opening, or deroping, the tubular cloth. The ordinary tubular opener consists of a stainless-steel rod in the shape of a horseshoe with a bar connecting the two ends (Fig 4). This device is on the inside of the tube and is held stationary by a mangle. This system is rather hard on the cloth as the movement of the cloth against the frame and the mangle depends entirely on slippage. There is considerable friction and length pull on the fabric and there is also some danger of nipping the cloth by the mangle.

The Tubetex spreading and extracting machine (Fig 5) is a considerable improvement over this method. The goods are fed by a set of driven rolls, one on each side of the fabric. The cloth runs between these driven rolls and is supported by sets of two idle rolls on the inside. By this method it is possible not only to prevent all length pull but also to overfeed the fabric.

Tubular goods may also be framed and dried on a stack dryer (Fig 6). The goods are pulled over the stack, which consists of a 6" pipe through which hot air is blown. The fabric coming from the pipe is pulled over a wire cage and rolled up on cardboard tubes. The hot air is forced

through the slowly rising cloth, which is allowed to roll up in a slightly damp condition. This method has been used for quite some time and is still popular for use with wool or worsted jersey and some blends. All creasing is eliminated and length tension can be controlled.

Dried goods which are to be finished tubular are steam-calendered for relaxation and removal of every possible wrinkle. The equipment consists of a Tubetex Steaming Mangle connected with a roll-up device.

The Tubetex Tensionless Calender has an added relaxation device following the calender. The goods travel over little rolls up on a 45° angle, which provides additional time and a chance for relaxation.

Some tubular goods are decatized after steam calendering. This treatment provides a smooth flat finish, which is especially beneficial for all-wool or worsted jersey or fabrics containing large percentages of wool. Caution, however, must be maintained with synthetics and blends, especially if they contain thermoplastic fibers, as decatizing might produce unwanted sheen, flatness and stiffness. The decatizers are the same as those used for woven goods, consisting of a perforated drum and blanket on which the cloth is rolled. The steam is blown from the inside of the drum through the roll.

Some fabrics are treated with a chemical finish on the mangle. This method, however, can only be applied if the creases on both sides of the tube do not interfere. The Tubetex Pad and Dryer is most suited for this operation. Resins can also be applied and dried in this way. The curing is preferably done in the loop dryer.

FLAT GOODS———Goods that are intended to be sold flat fold are split on a cutting machine after being dried. This consists of a tubular spreader equipped with a knife on one side. The operator guides the cloth on the cutting line, which is usually indicated by a needle out. From here on the goods follow generally the same pattern as woven goods with one exception: because of the tendency of knitted fabrics to deform and curl along the edge under pull, the goods on most operations are fed into the machines by special opening and uncurling devices. Many different methods are being used for this operation. The most common are the spiral roll, which turns against the movement of the fabric, and the uncurling belt, which runs on the edges of the cloth laterally to the movement of the cloth in an outward direction. This tendency to curl on the edges is hindersome with certain fabrics in dressmaking on the cutting table. It can be corrected in two ways: namely, by the application of an anticurl finish or by gumming the edges of the fabric. Anticurl finishes consist of binding and stiffening agents which are applied on a mangle. This treatment can be used only on goods that allow some stiffening.

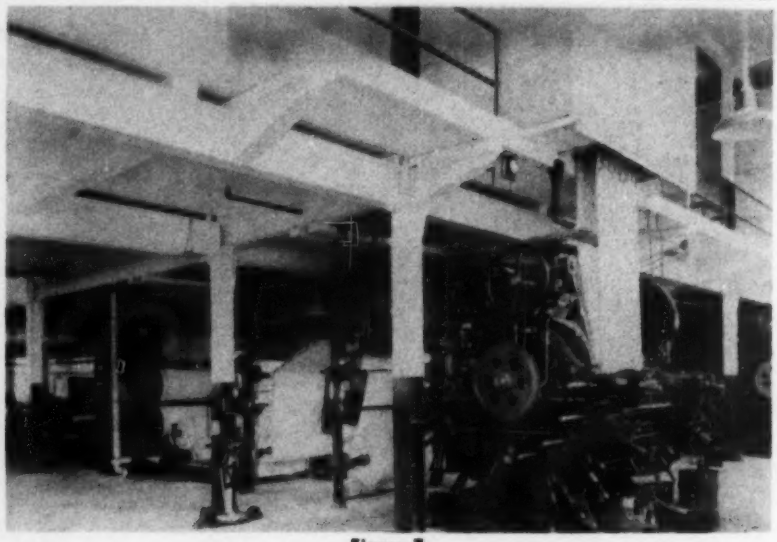


Figure 7
Regular print machine

Gummed edges are applied on a pin frame by a cog wheel, which furnishes a heavy gum solution to the edges of the cloth. For this purpose a solution of ethyl cellulose or any other colorless gum or stiffening agent can be used. The gum is applied to the cloth next to the pins. The edge of the cloth actually running on the pins is trimmed off at the end of the frame before being rolled up. In this way a smooth roll is obtained, which lays up flat on the cutting table.

PRINTING———A smooth roll is also very important when goods are to be printed. Printing can be done both on tubular as well as on flat-fold cloth. In the case of tubular goods they are printed on both sides of the tube. This can be accomplished in two ways: either by running the goods twice through a regular printing machine (Fig 7) or by duplex printing. Duplex printing is the more elegant and efficient method, but very few printers have duplex machines (Fig 8 and 9). The printing of tubular goods on a regular print machine requires

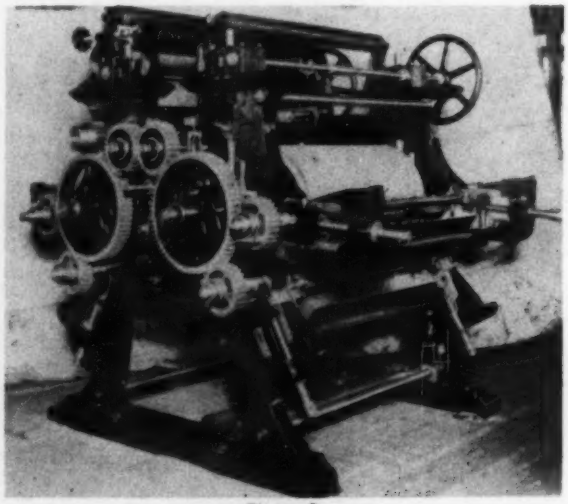


Figure 8
Duplex print machine

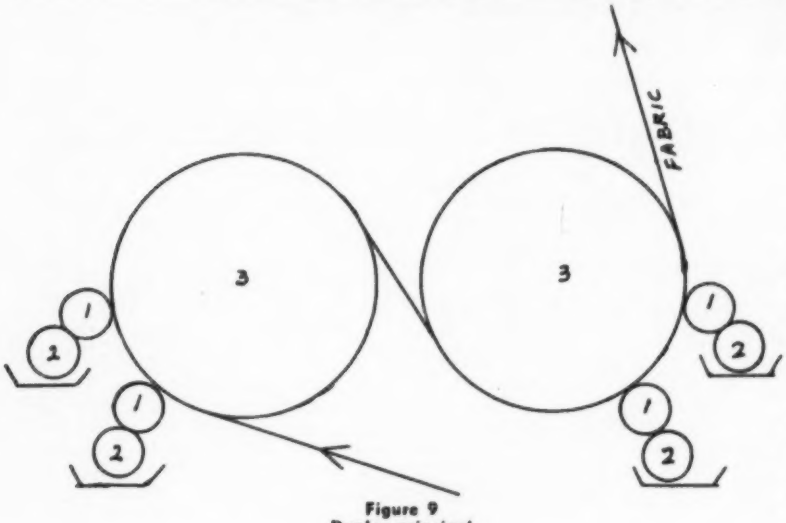


Figure 9
Duplex principal
1—printing rolls
2—furnisher rolls
3—cylinders

care that the goods are very tightly and evenly rolled up after the first printing, so that, in the second printing, the cloth passes between the rolls smoothly and in the original fold. The engraving of the printing rolls must be properly balanced to give adequate coverage but not excessive penetration into the back layer of the cloth.

In printing flat-fold goods, care must be taken to avoid tension as much as possible. Because of the ease of distortion of the fabric it is advisable to paste most fabrics to the backgrey to obtain close registration.

The processing of knitted goods after printing is much the same as that of woven goods with the exception of aging. Because of the tendency of the cloth to crease and curl under pull, the customary agers are not suitable and steaming is accomplished either in the vertical, or tower, ager (Fig 10), in the festoon ager, or in the cottage steamer. For the same reasons the goods are usually washed in rope form rather than on the open-width washer. The curing of pigment prints is accomplished in the loop dryer at the customary temperatures depending on the type of colors and fabrics.

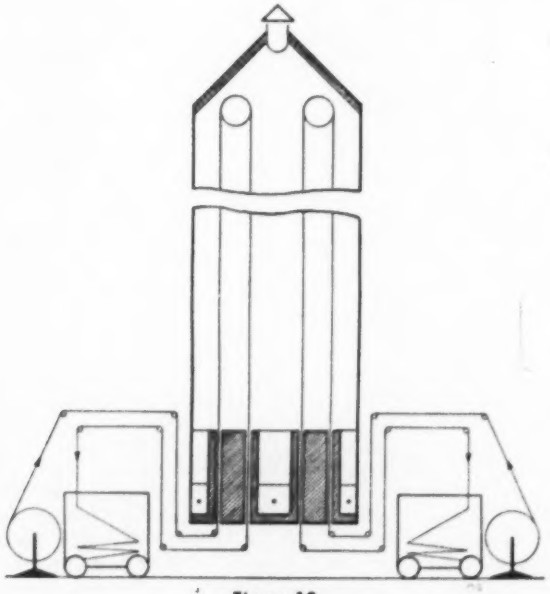


Figure 10
Vertical ager

CONCLUSION

I have attempted to describe a large subject by a short tour through a finishing plant for tubular synthetic fabrics. In doing so I tried to point out some of the different approaches which have to be followed compared with those for processing woven goods. In order to give you a slight idea of the variety of materials which can be produced by knitting, I have brought with me a small collection of different types of fabrics for display and discussion. I hope that you have enjoyed our tour and that it has stimulated your interest in the possibilities of knit goods.

—♦ ♦—

NOTICE

To Authors and Section Officials

Under a new ruling of the Publications Committee, all papers presented before local sections of AATCC must be submitted direct to the managing editor of the AMERICAN DYESTUFF REPORTER, 44 East 23rd St, New York 10, N Y. Two copies of each manuscript should be submitted in accordance with the "Notice to Authors", which appears periodically in the *Proceedings*.

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Midwest Section——

PRODUCTION AND UTILIZATION OF NONWOVEN FABRICS*

H L LEVENTHAL

Superintendent of Fabrics Division
The Visking Corporation
North Little Rock, Arkansas

Nonwoven fabrics, in which fibers are held together in a continuous sheet, are capable of a behavior in use comparable with those that are produced by the multiple techniques of spinning and weaving. The author describes first the formation of the web of a nonwoven fabric, whether random, oriented, or two-directional, and then discusses continuous and discontinuous bonding of fibers and the advantages of each. Bonding may be carried out with many types of chemicals or agents, including simple adhesives, curable resins, thermoplastic fibers, and solutions of cellulose, the procedure of application for each of which is described. The paper concludes with the coloring, finishing, cutting, properties, and uses of nonwoven fabrics.

INTRODUCTION

I SHOULD like to begin by defining a nonwoven fabric as a fabric created by utilizing the ability of adhesive substances to unite fibers into a continuous sheet capable of behavior comparable to that produced by the multiple techniques of spinning and weaving. In forming a fabric, one induces fibers to perform an integrated function. How the fibers are united is the distinctive nature of the nonwoven fabric, and of equal importance is the geometric relationship of the fibers to the binder. Thus, a nonwoven fabric is composed of two major parts: the web and the binder.

Nonwovens have been called the newest form of fabric; however, they are probably the oldest type of textile. Prehistoric man made clothing and mats from the inner bark of trees, such as mulberry. The material called *tapa* is one of the finest examples of a strong soft product similar to commercial nonwovens, but tapa employs retting and beating techniques rather than textile techniques. The processes of coating cotton wadding and the impregnation of cotton wadding bats are covered in patents which date back to about 1860, and many other basic factors relating to nonwovens date back at least three decades.

The fiber manipulation involved in laying a web deals with approximately 118,000,000 fibers per pound in the case of cotton, and approximately 78,000,000 fibers per pound in the case of rayon. Also, the ratio of length to diameter of these fibers is approximately 4000/1. When one considers that these fibers must be separated and redeposited into a uniform web, some of the problems involved become apparent. This difficulty in manipulation is the reason why commercial production of nonwovens has lagged so far behind the basic concept. While the types of web production to be discussed are the main ones used in the nonwoven industry, it should be noted that other means do exist, and newer ones are in the process of being developed.

PRODUCTION OF WEBS

A nonwoven fabric is composed of two major parts, the web and the binder. The web is the fiber lay, or the fibrous portion of the fabric. There are two types of fiber formations used to produce nonwovens, and they are designated in the industry as oriented and random webs.

The oriented web is primarily produced by conventional textile methods. The preparation of the web utilizes the processes of opening, picking and carding. The opening process is a mechanical procedure by which the baled fibers are loosened from their baled form. As a result of the opening operation, a bale of fiber will occupy ten to twenty times the volume of the original bale. After the bales are opened and the fibers are permitted to regain moisture, the fibers are ready to begin their transformation into a web. The normal moisture regain for cotton is 6% and for rayon 11% based on bone-dry material.

In order to be transformed into a web the fiber passes through two major pieces of equipment, namely, the picker and the carding machine. Time does not permit detailed consideration of these pieces of equipment, but standard works on this subject are plentiful. The first piece of equipment, the picker, has three main functions:

1) Additional opening.
2) Cleaning.
3) The formation of laps which are used as feeds to the carding machine.

The second piece of equipment, the carding machine, also has three functions:

1) The disentangling of the cotton fibers, or the separation of the bunches, or tufts of fiber into individual fibers.
2) The removal of the smaller and lighter impurities.
3) Changing the fiber formation from a lap to a web accompanied by a reduction in weight per yard of material.

The weight of the web from a card normally can range from 40 to 200 grains per square yard. By means of suitable conveyors webs are collected and superimposed on each other to form the composite web, which in turn is fed to the bonding unit. The composite web weight may be varied by varying the number of cards depositing web on a conveyor. This capacity is controlled by the type of fibers to be carded and the quality of the web required.

Since the characteristics of a nonwoven are to a great extent controlled by the nature of the base web, it is important to note that those nonwovens composed of webs made solely by carding methods have a maximum machine, or grain-direction, strength, but by the same token have a minimum transverse-direction strength.

In order to approach a squareness, or a machine-direction/transverse-direction ratio of one, considerable research effort has been spent in developing the random web. Two main approaches have been employed in developing a web with fiber arrangements other than the so-called paralleled arrangement in the carded web. One of these methods can be called the cross-lay method. In this method paralleled webs are layed in the transverse direction in order to improve transverse-strength characteristics. The procedure can be

* Presented on Oct 30, 1954, at the Bismarck Hotel in Chicago.

modified in such a manner that either the transverse-layed webs are used in conjunction with machine-direction webs or by themselves.

The second major method for the preparation of a nonoriented web utilizes aerodynamic manipulation. A commercially available type of equipment has two components, which are designated as the *feeder* and the *webber*. The feeder section is somewhat similar to the feed section of a picker, which consists of a feeder hopper and a slat and pin conveyor. The webber section manipulates fibers by utilizing three different air streams. The first stream is responsible for fiber and clump separation. The second air stream mixes the small clumps and free fiber, and the third stream drives the fiber and clumps against a condensing, or collecting, screen. The collection is followed by a calender, and then the web is ready for the bonding operation. The web formed by the aerodynamic manipulation described actually has undergone only a very small degree of fiber working in the textile sense. Therefore, it must be expected that

1) The shorter the staple, the better the machine will operate.
2) Webs would be limited in weight range with better formations at medium and heavy weights rather than at light weights. The manufacturer claims a range from 250 to 3500 grains/yd^2, but examination of webs produced indicates that the 250-grain web is not of practical commercial quality.
3) Because of the limited adaptable fiber length the quality of web formation is limited with respect to web strength.
4) Production is limited by the feed and working rate. The production for this equipment is rated by the manufacturer at 35 pounds per hour at a width of 40 inches.

SUMMARY OF WEB FORMATIONS

Oriented Web

1) The carded web is produced by the carding engine.
2) The individual card is capable of preparing webs ranging from 40 to 200 grains per square yard.
3) The preparation of the composite web prior to bonding is accomplished by superimposing individual carded webs.

Two-Directional Webs

1) The equipment is used in conjunction with carding engines.
2) The rate of production is not greater than the supporting textile equipment.
3) Mechanical problems still require solution prior to general acceptance in the industry.

Random-Fiber Webs

1) The equipment utilized is not expected to require normal textile-equipment support with the exception perhaps of the picker.
2) The separation and redeposition of fibers is done primarily by aerodynamic methods.
3) The rate of production is relatively high with a capacity of about 35 pounds per hour/40" width.

BONDING OF WEBS

After the desired type of web has been produced, the fibers must be cemented together by a suitable binder. The binder may be applied from a solution or dispersion, or it may already be present in the web in the form of thermoplastic or solvent-soluble resin fibers. Solution or dispersion binding may be either continuous or discontinuous. The equipment used in continuous bonding is generally an impregnating bath or a modified padder. The web passes through a bath of the impregnating solution or dispersion, where it is saturated with the binder. Then it passes through squeeze rolls, which remove some of the liquid, and proceeds to subsequent treating equipment.

"Discontinuous bonding" is the term applied to bonding operations in which the impregnating solution is not uniformly distributed throughout the web. Application of the binder in a definite pattern by printing techniques is the commonest discontinuous bonding process used in the industry. Nonwovens made in this way generally have less than 50% of the web bonded. As a result, there are far fewer fiber-to-fiber bonding points than is the case with continuously bonded fabrics, and the discontinuous bond is considerably weaker.

For the same reason, a discontinuously bonded fabric is softer, and has good drape, so that it is desirable for many specific uses. The lack of strength in the transverse direction is particularly pronounced in a web which has been discontinuously bonded, and particular attention must be given to the choice of the type and frequency of the bonding pattern to use, in order to impart as much transverse strength as possible. Diamond and dot patterns allow transverse stretch of the fabric before failure, and therefore fair transverse performance. Bar bonds also may be used, but the bar must extend in the transverse direction to give transverse strength. The frequency of the pattern recurrence should be such that bonding points occur about once every half fiber length.

Other methods involve the addition of binders to a prepared web by dusting or spraying the adhesive onto the web. These methods are not widely used.

BONDING AGENTS———The number of available agents for solution or dispersion bonding is large. Early nonwoven fabrics used starch, casein, or glue for the binder. After this, prevulcanized rubber latex and polyvinyl acetate were successfully employed, and still later, viscose came into use. Other binders which have been investigated are solutions of pheno-, urea- and melamine-formaldehydes and various dispersions of polyvinyl chloride, polystyrene, polyacrylates and butadiene copolymers, to mention a few. In addition, the water-soluble polymers, such as carboxymethylcellulose, methyl cellulose polyvinyl alcohol, polyvinyl ethers, and others have been investigated.

The natural and synthetic latices are relatively easy to employ as binders. The aqueous dispersion of the binder is applied in conventional bonding equipment, and may be coagulated merely by evaporating the water. In some cases, however, it may be necessary to coagulate the binder in the wet web, in which case the impregnated web is saturated with a solution of a strongly ionic salt, which causes coagulation. If desired, plasticizers may be added by dispersing in water and adding directly to the latex in the impregnating unit. It may also be desirable, in the case of rubber latices, to add vulcanizers and accelerators to promote curing. These agents may also be added directly to the impregnating unit, although some thickening may be necessary to keep them suspended. If the rubber is cured, drying temperature must correspond with the curing temperature, and the cure time must be fairly short.

Bonding with resin monomers or prepolymers in most cases requires dispersion of the straight monomer of prepolymer in water to reduce the amount of binder added to the web. If the straight monomeric resin were used, the fabric would be stiff after polymerization, and could not be rolled up, unless the polymer were quite flexible. Catalysts are required, of course, and plasticizers may be added if desired. Impregnation is accomplished with conventional equipment, and the drying temperature must be such that polymerization is initiated.

The use of cellulose dispersions, such as cuprammonium cellulose or xanthate dispersion (viscose), is somewhat more complicated than most of the other bonding methods. After the web has been impregnated, the cellulose must be regenerated. Then the excess by-products must be purified and dried.

The Visking Corporation is the primary

producer of cellulose-bonded nonwovens, which it sells under the trademark of Viskon. For many applications, cellulose-bonded fabrics are superior to those bonded with other materials. The cellulose-bonded fabrics have high wet strength, and the bonding agent is insoluble in organic solvents and most inorganic solvents. Moreover, the cellulose is odorless, tasteless, and nontoxic, and will not soften at elevated temperatures.

THERMOPLASTIC-FIBER BONDING ———Besides solution and dispersion bonding, there are processes by which the web is bonded with thermoplastic fibers blended into the web itself. These fibers are blended with the cellulose fibers in the picker, and the picker lap is carded into a web. The web is passed between heated rolls or over dry cans to soften the thermoplastic fibers, which bind the whole web together. It is also possible to soften the thermoplastic fibers by impregnating the web with solvents.

Any thermoplastic fiber may be used in this process, provided the softening temperature of the polymer is reasonably low. Two fibers which are widely used in this manner are cellulose acetate and Vinyon. Vinyon is a fiber made by dissolving vinyl chloride-vinyl acetate copolymer in acetone and spinning filaments in air. Cellulose acetate fibers are produced in the same fashion. The softening point for Vinyon is 170°F, and for cellulose acetate, 350°F. The cellulose acetate can also be saponified to cellulose in the fabric after bonding.

In the foregoing discussion, the processes of web formation and bonding of the web have been described. After bonding, the impregnated web must be dried or cured, except in the case of bonding with thermoplastic fibers. If drying is all that is necessary, the operation can be performed on steam-heated dry cans or in an oven. If curing is required, higher temperatures (270-450°F, depending upon the time cycle) are generally needed. The same equipment can be used, although it may be advisable to replace steam heating with heating by a liquid with a higher latent heat. The fabric emerges from the drying process pressed free of wrinkles. It is wound up in mill rolls prior to further chemical treatment or slitting.

COLORING AND FINISHING——— The main chemical treatments applied to the finished fabric are the addition of colors, water repellents, fire retardants, and softeners.

For the purpose of coloring, nonwovens lend themselves very well to both pigmenting and dyeing. The dyeing of nonwovens can be accomplished with direct, acid or basic types of dyes. Vat or sulfur colors are not generally employed in connection with nonwovens. In connection with cellulosic nonwovens, direct colors give the best degree of fastness and lowest degree of brightness, the acid colors are intermediate, and the basic give maximum brightness with minimum wash or light fastness. The direct colors are specific for cotton and rayon fibers and are capable of being absorbed by the fibers. For the application of dye colors normal jigs or other standard dyeing equipment can be used.

Many uses for nonwoven fabrics require softness and good drape. If strength requirements are not high, a discontinuous bonded fabric is used. If the end use requires strength as well as softness, then a continuously bonded fabric must be used, and softening is often necessary. The properties of the various types depend also upon the type of fiber in the fabric, and the type of binder used to cement the fibers together.

SLITTING, CUTTING, REWINDING ———After the fabric has been produced, and any necessary chemical treatment has been applied, it is ready to be slit to order. The operation is performed on standard slitting equipment, which rewinds the fabric under tension from the mill roll to a cardboard core, at the same time cutting the fabric into the width desired by the purchaser. If the material is desired in cut sheets rather than in rolls, the slit roll is run through a cutting machine to produce the sheets. Alpha, Beck and Seybold machines are common examples of equipment employed.

USES

Some of the major uses of nonwoven fabrics are as follows: disposable diapers, wash cloths, vacuum-cleaner bags, survey flagging, wave pads and end wraps, filter cloths, desiccant bags, bowling-alley dusters, cheese press cloths, cheese bandages, hog bung liners, pan liners, artificial flowers and casket liners. As you can see, nonwovens are with us from beginning to end, and, because of their superior performance and economy of application, this relatively new entry into the textile field is established as a permanent textile commodity.

ACKNOWLEDGMENTS

The author wishes to acknowledge the very essential assistance of J E Stice, now with the University of Arkansas in the Department of Chemical Engineering; of D M Davidson, Division chemist of the Visking Corporation in the Fabrics Division, North Little Rock, Arkansas; and of Mrs M L Polk, also of the Visking Corporation.

CONVENTION TOPICS

Many of the myriad details connected with the forthcoming Association Convention September 22-24 at Chalfonte-Haddon Hall in Atlantic City are of advance interest to members, and we take note of some of these herewith:

* * *

Registration begins officially Wednesday, Sept 21, and continues every day through the 24th. So you can register every day, but the best time to come is early so you won't miss any of the events or sessions at the Convention.

* * *

Exhibits of leading firms in all phases of the industry will be featured in the 1955 Textile Dyeing and Finishing Exhibit, which will run concurrently with the Convention, on the Lounge Floor of the Haddon Hall, from Sept 21 through Saturday, the 24th.

* * *

An interesting feature of this year's Convention will be a complete ladies' program, with special features planned for every day. And one of the most special is a day at the race track, with one race named for the AATCC Convention. Suggested name: "The Dyer's Handicap."

* * *

Registration prices have been set as follows: Members: $7.00; Nonmembers, $10.00; Ladies, $5.00; Olney Luncheon (Sept 22), $5.00; Alumni Luncheon (Sept 24), $5.00; Banquet (Sept 24), $8.00.

* * *

The Olney Award Luncheon (Miles A Dahlen is the 1955 winner), will be held on Thursday, Sept 22; the Alumni Luncheon will be held on Saturday, Sept 24, and the annual banquet Saturday night in the Carolina Room of the Haddon Hall, featuring an $8.00 menu with a grilled filet mignon as the *piece de resistance* — and that's a bargain at any banquet.

* * *

Ivor Griffith, of the Philadelphia College of Pharmacy, will be toastmaster at the annual banquet Sept 24th.

* * *

Thomas Hart, chairman of the Reception Committee, reports that the Committee will greet lady guests at the Convention at a cocktail party Thursday (Sept 22) afternoon.

* * *

Ernst Empting, co-chairman of the Registration Committee, anticipates a registration of 2,500 members and guests, and that will make it the biggest Convention in AATCC history.

• PATENT DIGEST •

PAUL WENGRAF

CONCENTRATED PIGMENT PRINTING PASTES of Water-in-Oil Type——— Silicones Added D,2,07

USPat 2,691,602 (Rock Hill Printing——Weisz, Costner——Oct 12, 1954)

The preamble offers a description of printing pigments with water-in-oil pastes. While these pastes composed of one part of a 25% pigment color paste and 5-10 parts (or more) "clear" (referred to as "normal colors, 5 to 10 light") do not cause substantial trouble in printing with engraved rollers, higher *concentrated pastes* which contain from 4 to one part clear on one part of the above color paste (4 to one light) are not readily printable. It has been observed that in concentrated pastes of the latter type the pigment adheres firmly to the roller and cannot be scraped off from the nonetched portions of the rollers. The pigment applied either in the form of any water-insoluble colored powder or as an aqueous pulp, such as a press cake, dries out on the roller, causing damage to the roller and the doctor blade and consequently producing streaks and "facing" of the nonprinted ground.

The inventors observed that additions of small amounts of organic, solvent-soluble water repellents, specifically the polysiloxanes, such as "Silicone 81182" (General Electric) or "Antifoam A" (Dow Corning), make it possible to use the concentrated pastes without a resultant drying of the pigments on the rollers. Any siloxanes such as polymers derived from polyalkyl polyhydroxy silanes (eg, dimethyl dihydroxy silane) can be used alone or in combination with other resins in this process. The preferred concentration is said to be about one part of the silicone compound to 3000 parts or less of the paste. The pastes are prepared by dissolving a resin (preferably an alkyd) in a solvent, adding water to form the water-in-oil emulsion, then adding the pigment paste, and finally, the silicone water repellent, all in one operation.

Example: A blue color paste, containing a dispersion of Phthalocyanine Blue in alkyd resin and water, was blended at a ratio 1:3 with the clean emulsion of "Alkyd Resin R", which contained a 50% Glyptal resin solution in mineral spirits mixed with mineral spirit solvents and water. This paste had *all the drawbacks* enumerated in the preamble. These disadvantages were completely avoided by adding to 4000 parts of the above paste one part of the silicones as mentioned above.

Among the references cited by the Patent Office:

USPat 2,571,029 (Dow Corning Corp/1951) describes a mixture of aryl-alkyl siloxane resins with alkylated melamine-formaldehyde condensates plus a minor proportion of alkyd resins.

USPat 2,523,065 (General Electric/1950) and USPat 2,467,858 (General Electric/1949): adding a small amount of polysiloxane resins to pigmented oil-modified (alkyd or phenolic) resins to inhibit pigment flotation in coatings.

USPat 2,504,136 (Interchemical Corp/1950) covers a pigment-printing composition (preferably of the water-in-lacquer type), comprising a styrene-butadiene copolymer and an alkylated formaldehyde resin in solvent solution, and optionally an alkyd resin (col 6, line 66) homogenized with the pigment.

USPat 2,222,582 (Interchemical Corp/1940) covers printing emulsions of the water-in-lacquer type, wherein the pigments are present in aqueous suspension and homogenized with the lacquer phase, consisting of solvent solutions of aldehyde-modified alkyd resins.

DYEING POLYAMIDE FIBERS WITH ACID DYES——— Naphthalene Sulfonic Acids Added C,4,07

Brit Pat 710,103 (Imperial Chemical Industries ——June 9, 1954)

The use of acid dyes on fibers of the nylon group will generally produce unlevel results unless the adsorption rate is controlled, either by adding the dyes quite slowly and gradually or by enhancing migration of the dyebath by increasing the solubility of the dye [cf Du Pont's USPat 2,499,787, *Am Dyestuff Reptr* 39, 389 (1950)]. Another method consists of introducing into the dyebath substances which will "compete with the dyestuff for the dyeing site", thus temporarily blocking the fibers. Brit Pat 626,446 (Allied Chemical & Dye/1949), which advocates the use of alkyl arylsulfonates or condensates of formaldehyde with naphthalene sulfonic acid, is quoted in this connection.

The current invention calls for the dyeing of linear polyamide fibers with acid dyes in the presence of a salt of *naphthalene di- or trisulfonic acids*. Acid dyes containing two sulfonic-acid groups in the molecule are preferred in this process as they exhaust well under acid conditions.

Example: Nylon half hose may be dyed uniformly in a formic-acid bath containing the disodium salt of naphthalene-1-3-disulfonic acid and a dyestuff mixture of Lissamine Fast Yellow 2GS (*C I* 639), Azo Geranine 2GS (*C I* 31) and Solway Blue BNS (*C I* 1054). The material is introduced into the boiling dyebath; dyeing is completed within 1½ hours. Poor levelness will be observed when naphthalene disulfonate is omitted.

Reference may be made to Ger Pat 648,176, which enumerates various agents that are apt to reduce the affinity of wool for acid dyes. Condensates of aromatic sulfonic acids with alcohols are listed but not the naphthalene (di- or tri-) sulfonic acids themselves.

APPARATUS FOR FIXING DYES under Constant Heat and Pressure C,6

Brit Pat 704,972 (Rydboholms Aktiebolag——March 3, 1954)

The preamble to the current invention discusses the problem of fixing and leveling, by an aftertreatment in an ager, dyes that have been padded on fabrics. Aging of the wet goods is said to be avoided by use of a proposed device, which consists of a dyeing tank and a roller rotating above; the dyed goods that come from the tank are wound on the roller. A hood is provided to form a closed chamber covering both the dyebath and the roller. It is stated that, in this event, the dyebath is maintained at approximately the same temperature as the atmosphere around the roller.

In contrast, the device covered by the current patent is designed to maintain the proper temperature and pressure conditions necessary for developing and fixing the color for a certain time while keeping the impregnating bath separate from the developing chamber and at a substantially lower temperature than the chamber itself.

The fabrics are padded in a customary mangle and, after being squeezed, are introduced through opening (6) into the chamber (4). Infrared lamps (24 and 26) line the path of the fabric, which is finally wound on a roller on shaft (13). After the chamber is closed, the roller winds up the fabric at constant speed. When the desired amount is rolled up, opening (6) is closed by filling trough

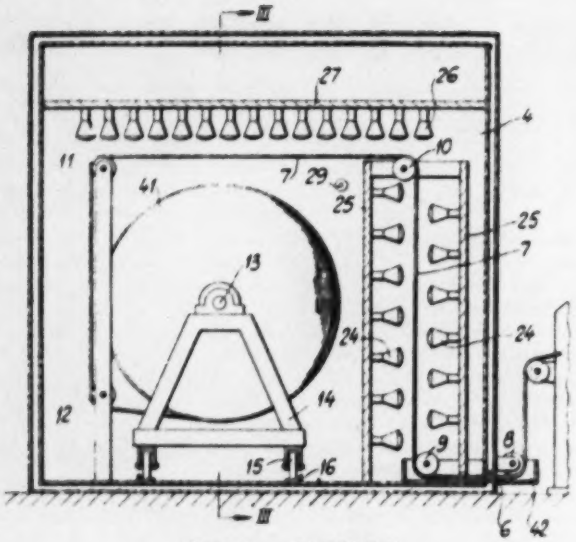


Figure 1 — BP 704,972

(42) with water, thereby forming a liquid trap to keep the pressure within the chamber constant. A fan is provided which circulates heated air throughout the chamber; the heat is automatically controlled by a thermoregulator. The roll is slowly rotated under these conditions for a time sufficient to bring about equilibrium of penetration within the treated material.

Typical dyeings using sulfur dyes (Eclipse Brown R), disperse (acetate) dyes (Cellitone Fast Blue B) and direct dyes (Chlorantine Fast Yellow RL) on this apparatus are described in the examples.

MOLTEN-METAL DYEING PROCESS———Counteracting Reducing Action of Alloys C,1

Brit Pat 707,462 (Standfast Dyers & Printers Ltd——April 21, 1954)

Some brands of disperse (acetate) dyes and wool dyes may be adversely affected and even permanently destroyed by reducing agents. A series of dyestuffs which is particularly sensitive in this respect is mentioned in the present specification.

It has been observed that the Wood's alloy employed in the molten-metal dyeing process [cf Brit Pat 620,584 and 665,454; *Am Dyestuff Reptr 41*, 442 (1952)] produces a slight reducing action on the aforementioned dyes. Accordingly a mild oxidizing agent must be added to the dyeing liquor to check any possible reduction, eg, sodium-m-nitro-benzene sulfonate ("Ludigol"), sodium nitrotoluene-p-sulfonate, or some stronger oxidizing agents, such as the vanadate, chlorate or nitrite of sodium. (The specification also mentions nitrate on p2, line 15).

Examples refer to the addition of Ludigol or nitrite to the acid dyes Solway Purple (*C I* 1073) and Lissamine Fast Violet 2BS, or to the disperse dye Duranol Red 2B, etc.

Book Review

THE CHEMISTRY OF SYNTHETIC DYES AND PIGMENTS

H A Lubs, editor with 18 Collaborators
Reinhold Publishing Corporation (New York)
XIV+734 pp — 1955
ACS Monograph No. 127
Price: $18.50

Since 1856 when Perkin discovered mauve, the first synthetic dye, nearly a century has elapsed. The salient results of these years of research on the chemistry of synthetic dyes and pigments are presented in this volume. Perhaps only those who have been associated with this field for years can truly appreciate the time, and effort, and experience necessary for the selection of the data chosen that made this work possible. Dr Lubs, his 18 collaborators, and the Du Pont Company, for supporting the undertaking, are to be congratulated for making a real contribution to the synthetic organic chemical industry.

No treatise on dyes can be complete in one volume. The limitations placed on this effort are expressed in the title, for the contents are confined to the presentation of the chemistry involved in the synthesis of organic colors starting from commonly accepted raw materials to the finished dye or pigment. The chemical reactions are indicated for the most part by use of graphic formulas for the intermediates as well as the final products. Some 1500 of these structures are used. Many of these reactions are supplemented by tables showing the general conditions for the reactions, and yields, with the source of information referenced. Documentation throughout is extensive; the first chapter on benzene intermediates alone, for example, cites 332 references. The authors have drawn heavily upon the information made available by the FIAT and BIOS reports for these references, which they acknowledge, but the field of documentation is much more extensive. Indeed, the pertinent arrangement of these references alone may well justify the book.

An outstanding effort has been made to include the chemistry of all major as well as miscellaneous types of dyes and pigments, with some 735 colors historically name and identified on the basis of chemical structure. The subjects are discussed by groups or sub-groups based mainly on the chemical chromophors or the type of application. The chapters on phthalocyanine pigments and dyes present for the first time in book form a comprehensive review of the literature of this newest addition to our color types.

Although chemistry is the substance of the work, this treatise is not a dictionary of pertinent chemical reactions. There is introduced sufficient historical, commercial, theoretical, and application data to provide interesting background for the reader. Nor is it an encyclopedia of dyestuff technology. Operating processes are not included. The art of dye and pigment manufacture still remains for the research chemist as well as the kettle operator to follow as his experience teaches to maintain his quality and his yields, as well as the continuity of improvements which started in 1856. This book as a reference should make the task simpler.

As a reference work, however, it will find much broader use than in the dyestuff industry. Many of the intermediates and colors described may well continue, as they have in the past, to become the new raw materials for the dynamic field of organic chemistry.

This ACS Monograph No. 127 is a well organized, well written, and well documented reference work. It fully meets the requirements and objectives of the monograph series.—JWL

ABSTRACTS

Some Problems in Dyeing Mixed Fibers

B Kramrisch, *Textile Mfr* 80, 393-4, November, 1954.

The increase in world production of synthetic fibers and their extended use in all branches of the textile industry has brought new problems to the dyer and finisher. This applies particularly to the processor of mixed materials composed of unions of the newer synthetic fibers with the established natural and man-made fibers.

The production of solid shades on unions of wool and nylon is now commercially possible in a wide range of shades and fastness by the use of selected acid, premetallized and chrome dyes. The introduction of caprolactam fibers such as Perlon and Grilon has added new complications. With many types of wool dyes, Perlon and Grilon show higher affinity than nylon, and as a result it is often extremely difficult to produce solid shades on unions of these fibers with wool.

At present Terylene can only be dyed with disperse dyes, or by the modified azoic process. If disperse dyes are used on unions of Terylene and wool, very heavy staining of the wool takes place, and this cannot be overcome by prolongation of the dyeing period, alteration in the pH of the dyebath, or the addition of a restraining agent. Scouring or a permanganate treatment will clear the wool to a certain extent.

Basic dyes exhibit good affinity for Orlon 42 from an ammonium acetate-acetic acid dyebath, but tend to stain cotton and viscose heavily. Disperse dyes in general tend to give slight staining of cellulosic fibers in unions with Orlon, but this does not interfere with the production of a wide range of two-color effects and solid shades by combination with selected direct dyes, using either a one-bath or a two-bath process.

In dyeing unions of Orlon and wool, although it is quite easy to dye the wool with acid, premetalized and chrome dyes and reserve the Orlon, it is a most difficult proposition to dye the Orlon and reserve the wool, or to obtain satisfactory two-color effects or solid shades of adequate fastness. Disperse dyes show marked staining of the wool; the fastness is poor, and a clearing operation is not too easy.

Many basic dyes have affinity for both Orlon 42 and wool, but in some cases different tones are produced on the two fibers, and the fastness of most basic dyes on wool is inferior to that on Orlon. Some of the modified basic dyes (Diorlenes), however, reserve wool, and attractive effects are possible by cross-dyeing the wool later with neutral-dyeing acid colors.—WHC.

Seventy-five Years of the "Dyer"

L E Morris (Editor) *et al*, *Dyer* 112, 771-855, November 12, 1954.

This is an anniversary issue, featuring 75 years of continuous publication of the "Dyer" under various changes of name. It contains a collection of articles, written by experts in their respective fields, showing the evolution in the technique of dyeing, printing, etc, from 1879 to 1954, and containing much information regarding modern methods and machinery.

H A Turner writes on "Dyeing of cotton and cellulosic fibers — retrospect to 1879," with descriptions and illustrations of ancient and modern dyeing equipment.

C C Wilcock gives a "Review of progress in rayon dyeing," a story of "cooperation between color chemist, fiber technologist, dyer, and machinery maker."

C L Bird reviews "Wool dyeing in the last 75 years," describing the evolution of modern dyeing equipment and the development of synthetic dyes.

A W Carpenter tells the story of the "Advance in hosiery dyeing" and its adaptability in processing a variety of knitted goods "from winter woolies to Terylene tricot."

G S Hibbert reviews "Seventy-five years of roller printing," and tells how chemistry and craftsmanship have "combined to meet the changing demands of trade and fashion."

F L Barrett and A E Stubbs report on "Bleaching 1879-1954," with emphasis on the development of modern machinery and controls and the advent of new fibers.

C S Whewell contributes "Progress in the finishing of woolen and worsted fabrics," comparing old-time and modern methods and including present-day mothproofing, waterproofing, etc.

K A Stott reviews "Seventy-five years' development in cotton finishing," and shows how the traditional techniques have been refined and new processes added.

A F Kertess tells of "Developments in textile chemicals," the use of which now plays a "vital role in textile processing."

R K Fourness traces the "Development of dyes and dyeing methods for cellulose acetate," in which "the chemists' skill has mastered a difficult fiber."

P Andrew concludes the series with an article on "dyeing and finishing nylon stockings," describing a special plant for presetting, finishing, etc.—WHC.

Modern Dyeing Machinery for Man-made Fibers, Yarns and Fabrics

A G Tyler, *Brit Rayon & Silk J* 31, 69-77, October, 1954.

The author gives a number of typical examples of post-war progress in wet-processing machinery, with particular reference to the influence of stainless steel in the evolution of plant design and techniques. Several British dyeing machines of various types are described, with photographs.

American manufacturers and users of dyeing machinery should find this article of considerable interest.—WHC.

Courlene———Courtaulds' Polythene Fiber

Anon, *Can Textile J* 71, #21, 61-3; #22, 62-3; October 22 and November 5, 1954.

Courlene is a monofil or multifilament yarn produced by Courtaulds from polyethylene. It is a tough, flexible, thermoplastic material which is exceptionally inert. It cannot be dyed except by coloring in the mass before extrusion. Colored yarns are produced by pigmentation.

Monofils are in commercial production, but multifilament yarns are at present only available for development work. The monofils are being produced in "clear" (transparent), black and white, various opaque colors, and translucent colors.

The tenacity of the fiber is 1.0 to 1.5 g per denier. The extensibility is 25-50 percent. It does not wet or absorb moisture. It floats on water. It softens above 90°C and melts between 110° and 120°C. Between 45° and 105°C it shows gradually increasing shrinkage. If suitable allowance is made for this shrinkage, a cloth stable to 60-70°C can be produced by suitable finishing (eg, by preshrinking in water or by dry heat at 80°C). The fiber retains its flexibility at sub-zero temperatures.

The insulating properties of Courlene are exceptionally good. In the processing of the fiber, static is often encountered.

Courlene has good resistance to weathering, but is eventually degraded by light. Only the black fiber is adequate for continuous outdoor exposure.

The fiber is nontoxic, odorless, and unaffected by insects or mildew. It is insoluble in nearly all solvents up to 60°C.

Seersucker effects may be produced by inserting Courlene threads in ordinary

textile cloths and subjecting them to a heat treatment.

In the removal of dirt from Courlene fabrics, hot washing (above 60°C for stabilized and below for unstabilized) and ironing must not be used. However, washing at room temperature with a small amount of detergent will remove dirt. This should be followed by rinsing and air drying.

Among the uses for Courlene may be mentioned upholstery, fusible interlinings, protective covers and clothing, ropes, filter cloths, surgical dressings, and electrical insulation.—WHC.

The Price of a Good White

Anon, *Dyer* 112, 611, 617, October 15, 1954.

The problem of obtaining a commercially acceptable white affects yarns and fabrics made from most fibers.

Cellulose fibers are most commonly bleached with chlorine, according to the author, who states that in spite of careful control, the degree of chemical and physical degradation of the fiber is still appreciable. Viscose and acetate require less bleaching than cotton, owing to the absence of natural impurities.

The wool fiber may be bleached by reduction with sulfur dioxide, or by oxidation with hydrogen peroxide. In both cases the properties and handle of the fiber are modified.

Silk is commonly bleached with peroxide, but a good commercial white is not obtained. If acid hypochlorite is used, the fiber is discolored and becomes wiry.

The regenerated proteins, Ardil and Fibrolane, are definitely offwhite, and prolonged mild bleaching treatments have to be used.

The acrylic-type fibers are all offwhite to a degree, and some are even a buff shade. As yet no commercially satisfactory method has been found of obtaining a good white on these fibers.

The polyamide fibers of the nylon type are discolored during heat setting. Sodium chlorite and peracetic acid are the preferred bleaching agents as they have the least tendering action.

Terylene as it is produced at present is close to a commercial white, and bleaching is only required to remove the effects of subsequent processing.

It was common practice to improve whites by bluing. To some extent, and in particular in connection with rayon, nylon, and Terylene, the dyer has replaced ultramarine pigment with optical bleaches. These agents possess a degree of affinity for the fiber, and impart a bluing, greening, or reddening effect. They possess the property of fluorescence, and are more sensitive to some lights than others.

The various optical bleaches are far from being chemically identical, and consequently each possesses its own particular properties, but to a degree they have a number of properties in common. They have a fastness to light of the same order as the more fugitive dyes, and there have been many instances of appreciable fading taking place on exposure in a shop window over a weekend. In many cases, this fade is completely offtone. Similarly, discoloration takes place on heating, and with reference to discoloration it may be said that optical bleaches reduce the safe ironing temperature of the fibers. The rate and susceptibility to discoloration appears to be influenced by the use of oxidizing agents such as are commonly present in household washing powders and agents used by laundries, and by the presence of metals, such as iron. Removal of the discoloration is extremely difficult, and the most practicable method appears to be the use of more optical bleaching agent.—WHC.

Synthetic Fibers from Japan

Anon, *Dyer* 112, 617-22, October 15, 1954.

Vinylon is a new synthetic fiber, discovered and developed entirely by the Japanese. It is quite different from any fiber that has ever been made in the United Kingdom or the USA. Technically, it is a polyvinyl alcohol that has been hardened by treatment with formaldehyde to make it resistant to washing. The process of manufacture is very cheap (the raw materials are coke and limestone), and it is the intention of the manufacturers to make Vinylon to sell at about the same price as cotton, or even lower.

The new fiber has a density of about 1.2, a tenacity of 3.8 g per denier, and an elongation at break of about 20 percent. It has a moisture content of about 5-5.5 percent, which is higher than that of any other synthetic fiber. This relatively high moisture regain makes it particularly suitable for fabrics worn next to the skin. In addition, it has good chemical resistance to acids, alkalis, and organic solvents, and good resistance to mildew, insects, and the degradative action of light. It is reported that the fiber has also good resistance to abrasion.

The fiber's defects are its rather low softening temperature of 210°C, and its low resistance to wet heat; although the latest Vinylon will withstand water at 115-120°C (under pressure), care is necessary when ironing fabric damp, to avoid a shine. Another defect is that it creases readily, owing to the fiber's poor elastic recovery.

According to the author, the fiber was not intended by its manufacturers to be used for suitings, but rather for uniforms, gymnasium suits, etc.

Other Japanese synthetic fibers now being produced are Amilan, a nylon product, and Kurehalon, made from polyvinylidene chloride. The production of viscose rayon, disrupted during the war, is again approaching the prewar figures. Acetate production is also increasing.—WHC.

Resists Under Indigosols

P Diserens, *Dyer* 112, 515-19, October 1, 1954.

Although resists under Indigosols had been known for many years, it was only between 1936 and 1939 that they were introduced on a large scale in commercial practice.

The main advantages of resists under Indigosols are that they lend themselves particularly well to the requirements of mass production and result in an important economy of labor, time, and steam. Moreover, the results are far superior to those obtained by discharging Indigosol or vat grounds, the dischargeable ranges of which are very limited and give only white discharge effects, while the resist method produces also colored effects.

None of the various chemical or mechanical resisting agents, taken separately, is sufficient to yield by itself good white effects; this is the reason that most of the recipes adopted in practice contain two or more chemical or mechanical resisting agents.

The various methods used to resist Indigosols can be classified into three main groups as follows:

1) Those which prevent, with the aid of reducing agents, the oxidation of the Indigosol during the development.

2) Those which neutralize the acid necessary for the development of the Indigosol.

3) Those which prevent the penetration of the Indigosol during padding; this effect can be obtained with the help of various compounds, such as thickenings with high solids content; quaternary ammonium salts, which precipitate the Indigosols; metallic salts, which insolubilize them; albuminous substances, which have a mechanical resisting action; water-repellent substances; amino-formaldehyde precondensates in combination with Rongalite C; and Bentonite, which absorbs the leuco ester and prevents its fixation.

Resists can be obtained either by first padding the Indigosol and drying, printing the resist paste and steaming to fix the illuminating colors, and finally developing the Indigosol in an acid bath; or by first printing the resist and steaming, padding the Indigosol, and then developing by one of the usual methods, preferably by the nitrite process. Full details for applying this process and for preparing the resist pastes are given by the author, with a description of the machin-

ery required.

The dyes most currently used for illuminating (colored) resists under Indigosols are the vats and the insoluble azoics. —WHC.

Mohair Pile Sealskin Fabric

Anon, *Dyer* 112, 353-5, 431-2, September 3 and 17, 1954.

Mohair pile sealskin fabric has a cotton foundation or backing cloth to support the pile. The cotton used for this backing cloth is previously colored with sulfur dyes, the warp being dyed in the rope form or on a beam, and the filling yarn in the form of hanks or cheeses. Dyes are selected that will stand the subsequent cross-dyeing of the mohair.

Before the pile is dyed, the fabric is pressure steamed, the treatment varying for 1 hour at 10 psi for full black shades to ½ hour at 5 psi for pale shades. Pressure steaming produces a pronounced yellowish color on the mohair.

After steaming, the goods are given a "lacquering" treatment to intensify the natural luster of the mohair. The lacquer consists of a paste prepared from egg albumen and wheat flour, and is applied in a special machine through which the fabric passes in open width. It is dried at once, pressure steamed again, and washed, after which it is ready for dyeing.

Where good fastness to washing is required, chrome dyes are preferred for coloring the mohair pile. A selected range of dyes is suggested. Prechroming of the mohair is recommended.

If the pile is to be printed in imitation of the markings seen on certain kinds of animal pelts, the dyes used must have good fastness to light and washing. The author suggests that brown shades may be obtained by the use of potassium permanganate, and gray to black shades with aniline salt, by the use of an oxidation process.

Directions for conducting these various operations and for finishing the goods are given by the author.—WHC.

New Developments in Pressure Dyeing

H Marsh, *Can Textile J* 71, 51-8, October 8, 1954).

There are three main methods by which dyeing is performed:

a) By moving the material to be dyed in a more or less static dyebath (eg, dye becks).

b) By moving both the material and the dyebath (eg, paddle machines).

c) By holding the material to be dyed in a fixed position and moving the dye liquor. This type of dyeing is rapidly increasing, and there is a wide variety of machines for operating in this way, including the hank-dyeing machines, loose-material machines, top or slubbing dyeing units, various types of package- or pack-dyeing machines that dye cheeses, cones, etc, and loose-material machines where the material is made into a tight pack and the liquor forced through in a horizontal direction.

Where the material to be dyed is in a cheese or cone form, the general term used is *package*. Where packing of the material in the carrier is necessary, the unit is generally called a *pack*, and the machine, a *pack-dyeing machine*.

It would be correct to call all these machines described under (c) "pressure-dyeing machines", but the generally accepted term today refers only to those machines where the material offers considerable resistance to flow, so that a pressure is set up which is easily measurable.

The author describes several different types of pressure-dyeing machines, including the principles of operation, the materials used for fabrication, and different methods of heating. He states that this method of dyeing can be used for a variety of textile materials. It is used extensively for dyeing rayon cakes. Other uses include the dyeing of narrow fabrics, such as ribbons, braids, webbing, etc, in roll form; beam dyeing, which requires a special machine and a different type of pump; and the dyeing of "Terylene" (equivalent to "Dacron") at temperatures above 100°C.

The advantages of pressure dyeing are numerous. The short liquor ratio (from 7:1 to 12-14:1) means a saving in steam, chemicals, etc; the dyes exhaust better; being enclosed, there is little escape of steam; the handling time is reduced and rewinding of the dyed yarn is unnecessary. Disadvantages include the high cost of the machines, greater care required in controlling the dyeing, and the lack of visibility of the material being dyed.

Silicones vs Can Sticking

F Fortess and S T Bowen, *Modern Textiles* 35, 31, 79, April, 1954.

A common difficulty encountered in the conversion of fibers to fabrics is the tendency of the sized warp yarns to adhere to the first few drying cans of the slasher. This is usually referred to as "can sticking", and results in broken filaments and rough, or "sandy" warps. To minimize this tendency for size to adhere and accumulate, the first two or three cans of a 7- or 9-can slasher may be covered with cotton canvas. This is the general practice when applying gelatin sizes to continuous filament yarns.

During the last two years increasing quantities of solution-dyed acetate yarns have been woven with such conventional sizes as gelatin, styrene-maleic anhydride copolymers, and polyvinyl alcohol. However, these typical sizes are water-soluble and readily water-spot under normal use conditions.

To overcome this condition and make possible loom-finished fabrics free from water-spotting, a number of sizes have been developed which are based on vinyl copolymers. These materials display a greater tendency to can sticking than the conventional sizes, and have led to the addition of antisticking agents to the size formulation. The authors, from their experience, conclude that these antisticking additives give inadequate protection, since they require critical control of can temperature and also contribute to water-spotting.

In an effort to provide a more easily applied and less expensive approach to a can-covering treatment, Celanese Research and Development has worked with Dow Corning Corporation on silicone treatments. They have developed a silicone resin which, when applied to a slasher can, cures to a tough, flexible adhesive film. The authors give details of this treatment, and report that in drying variously sized yarn with the first can so treated, over a period of two months no evidence of size accumulation or sticking was observed.—WHC.

Abrasion Resistance of Multifilament and Staple Yarns Tested on Modified Walker Abrader

E Abrams and H P Whitten, *Textile Research J* 24, 980-9, November, 1954.

Nine multifilament yarns and 18 staple yarns were tested on a modified Walker Abrader using the same low tension for all yarns. To correct all filament yarns to the same fineness (100 den), multiple strands of filament viscose 100/40 were tested, and a correction factor was obtained. In the same manner, multiple strands of Kuralon 80/2 were tested to obtain a correction factor for staple yarns. The Walker Abrader results for staple yarns were also corrected to 100 den.

After the results had been corrected, acetate filament yarns was found to have the lowest and nylon filament yarn the highest abrasion resistance among the filament yarns. In the staple yarns, acetate 20/1 had the lowest and Dacron 60/2 (worsted) the highest abrasion resistance. Comparing staple and filament yarns, acetate staple 20/1 had the lowest and nylon 100/40/2.5 filament the highest abrasion resistance.

In general, the abrasion resistance of filament yarns was greater than that of staple yarns.—WHC.

News of the Trade

• Northern Dyeing Set to Introduce New Finish

Norfix, a new finish for bengalines and failles, will shortly be introduced by Northern Dyeing Corp, Washington, N J. According to Frank J Percarpio, president, the new finish will supersede the Company's Nortex line.

Mr Percarpio stated, "This finish is superior to anything so far perfected since uniformity of drying on both sides of the cloth controls shrinkage to a point where either thick or thin hand may be produced while minimizing or eliminating break or pinch and/or shading."

"Besides these qualities, the Norfix finish retains the properties of shrink resistance, durable water repellency and wrinkle, soil, stain and perspiration resistance."

The basis for the new finish is provided by new equipment recently installed by the North Jersey firm at a cost of $75,000.

A 55-ft long tensionless curer-dryer maintains pin-point control of the three essential elements of the drying process: air circulation, cloth tension, and heat. The unit, embodying jet-type hot air circulation, is designed to give even drying thus preventing "shading" or uneven precuring under normal operation. This method of drying is said to result in erect and rigid faille ribs. Another feature, the use of fluid-driven rollers where the cloth is baked dry, is said to eliminate all tension on the cloth, thus reducing the maximum shrinkage of the fabric. The unit is said to provide a 4-4.5 minute cure running at 52 ypm.

Another production innovation at Northern Dyeing is the use of the Niptrol* Pneumatic Mangle as a dye padder. Mr Percarpio has stated that dye penetration has been improved by about 30%. The equipment, which is notable for its ability to apply even pressure across the full width of the fabric, is said to provide more level dyeing. Since the goods are processed full width, shading and pinch marks sometimes characteristic of beck dyeing are avoided.

Operating under the theory that shorter periods of processing make for better fabrics, Mr Percarpio estimates that goods go through his plant in about 40% of the time normally consumed in dyeing and curing procedures.

Northern Dyeing Corporation occupies the northern half of a plant which is a one-story structure except for the housing of the new curer dryer. This rises above the roof so as to keep the unit in the resin application range. The southern half of the plant is occupied by Castle Creek Prints, Inc, which is also owned and operated by Mr Percarpio. Robert Lesh, superintendent and research director, heads a fully equipped testing laboratory at the plant.

*Trademark of the Rodney Hunt Machine Co.

• New Cyanamid Research Groups Established

Two new research groups have been established in the Intermediates and Chemicals Section of the Bound Brook Research Laboratories of American Cyanamid Company.

A new Intermediates Group, under J H Thelin, will be responsible for research in the general field of chemical intermediates of the aromatic type. It will also be responsible for operation of the Preparation Laboratory at Bound Brook, and for the co-ordination of work between that laboratory and the company's New Product Development Department.

A newly-formed Special Chemicals Group, under J F Hosler, will be responsible for research in certain specific fields not at present covered by other product groups at the Bound Brook Laboratories.

• NID Alumni to Meet Next Month

The National Institute of Drycleaning Alumni Society will hold its annual reunion on August 12-14, with events at both the Institute in Silver Spring, Md, and at the Shoreham Hotel in Washington, D C. It will be the Silver Anniversary meeting of the Society.

A shirt-sleeve session will be held on Saturday afternoon, August 13, in the lecture room at the Institute. Featured will be "Hot Tips" by representatives of Alumni Chapters, and a panel on control of the charged system with outstanding technicians as leaders.

A Sales Promotion Clinic will be held on Sunday at the Shoreham. It will incorporate methods by radio, television, newspaper, and direct mail.

Entertainment will include the Hello Party on Friday night, August 12, and the dinner-dance on Saturday night.

All members of the drycleaning industry are invited to attend the reunion.

W I Peeler, who undertook the formation of the organization, has been appointed general chairman of the event by Jack Gallagher, NID Alumni president.

• CCW Changes Corporate Name

The management of Cincinnati Chemical Works, Inc, has announced that its corporate name has been changed to Toms River-Cincinnati Chemical Corporation.

The present properties and business of the corporation will be operated as the Cincinnati Division. Communications should be addressed to Cincinnati Division, Toms River Cincinnati Chemical Corp, P O Box 20, Evanston Station, Cincinnati 7, Ohio.

• Metro-Atlantic Opens New Jersey Office and Laboratory

Supplementing its service in Rhode Island, New Jersey and South Carolina, Metro-Atlantic, Inc, Centredale, R I, has announced the opening of a new office and laboratory at 20-21 Wagaraw Rd, Fair Lawn, N J. The new office has been established to service customers on dyestuff and chemical problems in the metropolitan and New Jersey area.

• National Aniline Continues Expansion at Moundsville

National Aniline Division, Allied Chemical & Dye Corp, will construct another large plant for the manufacture of aniline oil at Moundsville, West Virginia.

The new aniline plant, announcement of which followed by less than sixty days announcement of plans to construct a major plant for production of isocyanates at Moundsville, will be a duplicate of the present plant which commenced operations in January 1954. As in the existing installation, aniline will be produced in the new plant by a modern catalytic process developed in the Company's research laboratories. Requisite raw materials involved, all available within the Allied Chemical family, are mixed acid, benzene and hydrogen. Design and construction of the new unit will again be under the supervision of Forrest J Krueger, National Aniline's engineering manager.

• CA&E Producing Silicones

The Carolina Aniline & Extract Co, Charlotte, N C, has started manufacture of silicones for the textile leather and paper industries. The firm now ranks as a prime manufacturer of the various emulsions and compounds, and has announced to industry its available formulations for waterproofing, lubricating, and allied fields where these products are adaptable.

RECIPIENTS OF HONORARY DEGREES AT PTI COMMENCEMENT——————(L to r): Richard S Cox, dean emeritus; PTI; Milton Harris, president, Harris Research Laboratories, Inc; Theodore B Hayward, president, Franklin Parkway Bldg Co; and Frederick C Scholler, chairman of the board, Scholler Bros, Inc.

JOHN HILLDRING (right), president of General Aniline & Film Corp, was the recipient of a humanitarian award at a recent mobilization dinner of the United Jewish Appeal in Washington, D C. The presentation was made by Senator Herbert H Lehman (D—NY).

• PTI Graduates 79

Seventy-nine seniors, including thirteen foreign students, were awarded degrees and diplomas at the seventy-second commencement exercises of the Philadelphia Textile Institute held June 11th.

The principal speaker at the exercises was Andrew E Buchanan, Jr, general manager, Textile Fibers Department, E I du Pont de Nemours & Co, Inc.

Rinaldo A Lukens, chairman of the board of trustees conferred honorary degrees upon four men for their outstanding achievements in the textile field. Richard S Cox, dean emeritus, PTI, was awarded a Doctor of Textiles Degree. He was presented by Frank P Zurn, chairman of the Education Committee of PTI and a member of the board of trustees. Milton Harris, president, Harris Research Laboratories, Inc, was awarded a Doctor of Textile Science Degree. He was presented by Richard B Stehle, vice chairman of the Education Committee of PTI. Theodore B Hayward, president, Franklin Parkway Bldg Co, was awarded a Doctor of Humane Letters Degree. He was presented by Bertrand W Hayward, PTI president. Frederick C Scholler, chairman of the board, Scholler Brothers, Inc, was awarded a Doctor of Textiles Degree. He was presented by William H Hughes, Head of the Chemistry and Dyeing Department of the Institute.

The candidates for graduation were presented by A Ward France, dean of faculty and degrees were conferred by President Hayward.

Among the winners of special awards was Wallace H Nuttall, who received the AATCC award from Donald B Partridge, dean of students. Mr Nuttall and Walter H Foster, Jr were recipients of the Sara Tyler Wister awards for highest academic standing for the full length of the Chemistry and Dyeing Degree Course. Presentation of the latter awards was made by Mrs George Cavandish, granddaughter of Sara Tyler Wister.

A high fidelity radio-phonograph was presented to the college as the class gift by Paul Weintraub, president of the Senior Class. This gift will be placed in the new dormitory which will be completed for occupancy for the Fall semester — 1955.

William Popp, president of the PTI Alumni Association, presented fifty-year commemorative medallions honoring fifteen alumni who were graduated in the class of 1905.

Robert A Smith, chairman of the Alumni Fund, announced that $10,585.00 had been collected for the benefit of the Institute.

JACK J PRESS, Research and Development Div, Clothing Supply Office, U S Navy, is awarded a Meritorious Civilian Service Award by Rear Admiral WILLIAM L KNICKERBOCKER, Supply Corps, U S Navy, Commanding Officer, U S Naval Supply Activities, N Y, for his original development of testing devices and procedures for use in the engineering of approved apparel fabrics. Mr Press' work included that with the Appearance-Retention and Drape-Flex Stiffness Testers.

• LTI Confers 87 Degrees

Leonard Carmichael, secretary of the Smithsonian Institution in Washington and former president of Tufts College, served as commencement speaker at the 57th annual graduation exercises at Lowell Technological Institute on June 13th. The exercises, held in Cumnock Hall, featured the conferral of bachelor of science degrees upon 74 students and master of science degrees upon 13 graduate students, with president Martin J Lydon and Samuel Pinanski, chairman of the board of trustees, officiating.

Following his address Dr Carmichael was granted an honorary doctor of science degree, and other honorary ScD recipients were J Paul Mather, president of the University of Massachusetts, and Mr Pinanski.

Among the graduates receiving special awards was Nancy J Geary, who was presented the AATCC book prize by John M Gould, chairman of the Northern New England Section. Miss Geary was also awarded the AATT award by Prof Herbert J Ball.

Lt Col Walter E Kelly, USAF, commanding officer of the ROTC detachment at LTI, commissioned 17 AFROTC graduates as second lieutenants in the U S Air Force Reserve.

President Lydon delivered the charge to the graduates, and Prof Ball spoke on "Faith of an Engineer."

The commencement exercises followed by two days the Institute's Alumni Day activities, which were highlighted with the dedication of Dennett Mall leading up to the new auditorium-administration building, Cumnock Hall. Richard F Hadley, LTI '22, read the eulogy on the life of Mahlon W Bennett, a member of the class of 1917 who lost his life in World War I. In that war, Battery F was made up entirely of LTI students, and Mahlon W Dennett was the only member of the

Battery who did not return.

A bronze plaque commemorating his life was placed in the center of the mall by Battery F members. Daniel C Dennett, father of the man honored, assisted at the ceremonies. Acknowledgment of the plaque was made by President Lydon.

A new flagpole, the gift of Edward A Bigelow, '06, was accepted by Dean of Faculty Charles F Edlund. The Air Force ROTC color guard of the Institute raised the colors, and a wreath was placed on the Dennett plaque by Mr Pinanski. Master of ceremonies at dedication exercises was Clifford Harvey, '49.

The 56th annual alumni reunion began with open house, registration, and a business meeting where the alumni heard President Lydon speak on current affairs at the Institute. An honorary award scroll was presented to James F Dewey, '04, and an honorary membership scroll to Professor Emeritus Elmer F Fickett. Graduates were guests of the alumni at luncheon.

Golf and a social afternoon followed, and color films were shown by Wilfred Kimber, authority on color photography. At night a banquet was held with Prof John R Robertson as guest speaker, discussing "Labor Management."

• Five Honorary Degrees Conferred at BDTI Commencement

Honorary degrees were conferred on five men of national prominence by Bradford Durfee Technical Institute at commencement exercises held in Technical High School Auditorium, Fall River, Mass, on June 6th.

Those receiving honorary degrees were: George W Potter, chief editorial writer of the Providence, R I, Journal Bulletin and Pulitzer Prize recipient for distinguished editorial writing; Lombard Squires, E I du Pont de Nemours & Co, Inc, research chemist and chemical engineer identified with government A- and H-bomb programs; Rear Admiral Hyman G Rickover, USN, electrical engineer, "father" of the first atomic-powered submarine, the "Nautilus"; Hon Joseph W Martin, Jr, newspaper publisher and present minority leader of the U S House of Representatives; and Dr Percy Hodgson, past president of Rotary International and president and treasurer of Parkin Yarn Mill, Inc, Pawtucket, R I.

Mr Squires delivered the commencement address, "A Better America through Research."

BDTI, which sponsors a student chapter of AATCC, is observing its 50th anniversary this year.

• Nopco Honors Long-Term Employees

In recognition of a quarter century of loyal service, six employees of the Nopco Chemical Company were honored at a recent ceremony held at Nopco's home office in Harrison, N J. As a token of appreciation from the company, all were awarded solid gold watches.

The six were Foster L Jones, director of purchases for the company; Everett T Woods, manager of the Engineering Department; Louis C Nenninger, working foreman, Maintenance Department; Daniel S Rion, industrial salesman; William M Tango, production supervisor of the Richmond, Calif, plant; and John P McCormack, truck driver.

In addition to these, fifteen new members were inducted into the Nopco "Fifteen Year Club." Members are entitled to a three week annual vacation instead of the customary two. The new members received gold service emblems.

The presentations were made by Ralph Wechsler, president of the company. He noted that 25% of Nopco's employees have been with the company fifteen years or longer.

Also on hand to express his congratulations was Charles P Gulick, founder of Nopco, who now serves as honorary chairman of the board.

Recent visitors to the Southern Regional Research Laboratory, Southern Utilization Research Branch, USDA Agricultural Research Service, New Orleans, La:

Yrjo Hentola (right), chief of the Bleaching Department of the Central Laboratories, Research Institute of the Finnish Pulp and Paper Industry, Helsinki, Finland, discusses a slack-mercerized cotton fabric with G E Goheen, assistant chief of the Branch.

Kurt Hess (left), honorary professor of chemistry at the Technical Hochschule, Hanover, Germany, is shown examining an X-ray spectrometer with Dr Goheen and C M Conrad, head of the Cotton Fiber Section.

GENERAL CALENDAR OF COMING EVENTS

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS

National Convention—Sept 26-28, Lake Placid, N Y.

GARMENT DYERS GUILD OF AMERICA

Sept 9-10, Loebl Dye Works, Roanoke, Va.

THE FIBER SOCIETY

Fall Meeting—Sept 8-9, Massachusetts Institute of Technology, Cambridge, Mass; Spring Meeting—May 2-3, The Clemson House, Clemson, S C.

INTERNATIONAL TEXTILE EXHIBITION

2nd Exhibition—June 25-July 10, 1955, Brussels, Belgium.

INTERNATIONAL WOOL TEXTILE RESEARCH CONFERENCE

September, 1955—Sydney, Melbourne, and Geelong, Australia.

NATIONAL COTTON COUNCIL OF AMERICA

1955 Chemical Finishing Conference—Sept 20-21, Chalfonte-Haddon Hall, Atlantic City, N J; 7th Annual Cotton Research Clinic—Feb 15-17, Pinehurst, N C.

NATIONAL INSTITUTE OF DRYCLEANING ALUMNI SOCIETY

Annual Reunion—August 12-14, NID and Shoreham Hotel, Washington, D C.

PHI PSI FRATERNITY

Annual Meeting—April 19-21, Alabama Polytechnic Institute, Auburn, Ala.

SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS ASSOCIATION

Sept 14, Oct 11, Nov 9 (Hotel Commodore, New York, N Y).

NAMES IN THE NEWS

J R HOOVER, president, B F Goodrich Chemical Co, a Division of The B F Goodrich Company, was elected chairman of the board of directors of the Manufacturing Chemists' Association, Inc, at its 83rd annual meeting at White Sulphur Springs, W Va, last month. Mr Hoover succeeds FRED J EMMERICH, president of Allied Chemical & Dye Corp, who continues as a director of the Association.

WILLIAM C FOSTER, full-time president and a director of the association, was reelected, as was M F CRASS, JR, full-time secretary-treasurer.

WILLIAM H WARD, vice president, E I du Pont de Nemours & Co, Inc, was elected chairman of the executive committee.

HOWARD S BUNN, vice president, Union Carbide and Carbon Corp, was reelected as a vice president of MCA. Also elected a vice president was J ALBERT WOODS, president, Commercial Solvents Corp.

Directors elected for a term expiring May 31, 1958, are: ELTON W CLARK, vice president, Allied Chemical & Dye Corp; ERNEST HART, executive vice president in charge of chemical divisions, Food Machinery and Chemical Corp; JOHN A HILL, president, Air Reduction Co, Inc; JOHN E McKEEN, president, Chas Pfizer & Co, Inc; GEORGE L PARKHURST, chairman of the board, Oronite Chemical Co; ROBERT B SEMPLE, president, Wyandotte Chemicals Corp; KENNETH C TOWE, president, American Cyanamid Co; O V TRACY, president, Enjay Co, Inc, and ROBERT I WISHNICK, president, Witco Chemical Co.

THOMAS S NICHOLS, president, Olin Mathieson Chemical Corp, was reelected a director for the term expiring May 31, 1956.

J M HOERNER has been appointed general manager of the Chemical Division of Armour and Co, succeeding F B PATTON who has been appointed general manager of the Armour auxiliaries. Mr Hoerner joined Armour as director of sales and purchases of the Chemical Division in 1953.

IRA S HURD has been named technical director and sales manager of Moretex Chemical Products, Inc, a wholly owned subsidiary of Moreland Chemical Co, Inc.

Mr Hurd, who has held previous positions with Warwick Chemical Co, Dan River Mills, Rohm & Haas Co, and E F Drew & Co, is making his headquarters in Spartanburg, S C.

EDWARD F STARKE has been appointed assistant to PERCY MEEKER, vice-president of the Bishopville Finishing Division, Reeves Bros, Inc. Mr Starke will direct the quality control operations of the division as well as assist Mr Meeker in soliciting finishing for the plant from the company's headquarters at 54 Worth St, New York.

Mr Starke was formerly General Manager of the Impregnole Division of Warwick Chemical Co.

Hoerner

Hurd

Starke

Dinkins

Davis

Whittaker

PHILIP M DINKINS, a former president and director of Jefferson Chemical Co, Inc, has been elected vice president — operations, Dyestuff & Chemical Division, General Aniline & Film Corp, following the resignation of JOHN C FRANKLIN, which became effective June 1st.

As previously announced M R STEVINSON is serving the Division as director of research, having succeeded J W LANG, who was named manufacturing manager of the Division.

Serving with Dr Stevinson on the executive staff are the following: new fields research manager — *J M WILKINSON, who is also serving as manager of the Company's Easton, Pa, laboratory;* process research and development — *F J GAJEWSKI, manager at the Linden, N J plant, and C F JELINEK, manager at the Rensselaer, N Y, plant; and* process engineering manager — *D B ANDREWS. C F MONTROSS is serving as supervisor of economic evaluation studies, and H T THOMPSON continues as assistant to the director.*

G DANIEL DAVIS has been named to the post of executive vice president of the Nopco Chemical Company.

In his new position, Mr Davis will have full responsibility for the operation of the Industrial Division of Nopco including sales, production, and product development.

Starting with Nopco in 1916, Mr Davis became a vice president in 1937.

C M WHITTAKER, a past president of the Society of Dyers and Colourists, has been honored with honorary membership in that Society.

Dr Whittaker holds the Gold Medal of the Society for "exceptional services" in promoting scientific and technical knowledge among textile chemists and colorists, and for sustained and outstanding service to the Society. This was presented to him in 1943.

JOHN M HUGHLETT, vice president of J P Stevens & Co, Inc, was elected president of The Textile Color Card Association at a luncheon meeting of the organization's board of directors, held in May at the Empire State Club. Mr Hughlett, who has been a director of the Association for the past two years, succeeds ROY E TILLES, who served as president since 1946.

HENRY F DEVER was elected president of the Scientific Apparatus Makers Association at the recent annual meeting of the association. Mr Dever, president, Minneapolis-Honeywell Regulator Co, Brown Instruments Division, succeeds EDWARD J ALBERT, president, Thwing-Albert Instrument Co, who has held the office for the past two years.

Bowman

Dahl

Hunt

Wennergren

Dixon

Loomis

Sommer

Head

Lindgren

American-Cyanamid Company has announced the following news involving key personnel:

Organic Chemicals Division———WILLIAM H BOWMAN, since 1951 a vice president of Jefferson Chemical Co, Inc, has been appointed assistant general manager; NEIL B CONLEY, assistant director of sales since 1954, moves up to director of sales; and RAYMOND L CASSELL, since 1949 chief plant engineer at Bound Brook, has been named divisional chief plant engineer.

Plastics and Resins Division———The following have been named to manage five newly established regional sales offices: W F WHITESCARVER, New York; H B FREEMAN, Los Angeles; C W JOHNSON, Chicago; E H TRUSSELL, Boston; and C T BYRON, Cleveland. S T DAHL has been named manager of field sales.

E K HUNT was appointed sales manager, succeeding C J ROMIEUX, who resigned. Mr Hunt will direct the Division's sales, promotion, marketing and advertising functions.

N B SOMMER was named marketing manager — plastics. In this capacity, in addition to supervising the marketing of Cyanamid's existing group of thermosetting plastics, Dr. Sommer will direct marketing of the Company's new line of thermoplastic molding compounds.

R G HEAD has been appointed marketing manager — resins, which includes the Division's bonding, laminating and coating resins lines, polyester resins and phthalic anhydride.

V V LINDGREN has been appointed technical director of the Division.

Except for Mr Hunt, who was manager of public relations for the Company and Dr Sommer, who was manager of the Company's New Products Development Department, all have been connected with the Plastics and Resins Division for a number of years in the sales and technical fields.

T M WENNERGREN, since 1948 assistant to the advertising manager of the Division, has been appointed advertising manager, succeeding H W CYPHERS, JR, who has resigned.

Industrial Chemicals Division———H C MILTON has been named manager of the Manufacturers Chemicals Department, R L LAMBERT, assistant manager, and J F ALLEN, Eastern regional sales manager of the Department. Mr Milton moves from Eastern regional sales manager.

Pigments Division———LOUIS A MELSHEIMER, formerly manager of technical promotion, has been appointed director of technical service.

The retirement of JAMES DIXON and A C LOOMIS from the Dyestuff Department of American Cyanamid Company climaxes a total of 81 years service to the textile industry. Sixty-five of those years have been spent with Cyanamid in the Philadelphia and Springfield, Massachusetts, areas.

Born in Leeds, England, Mr Dixon began his career in 1905 as a woolen mill apprentice in Pittsfield, Mass. In 1911 he joined Worsted Mills Co in Cleveland as a textile designer, moved to Boston in 1918 as a salesman for V E Drew & Co.

During his association with Cyanamid, which began 35 years ago, Mr Dixon served the Philadelphia area as a sales representative of the company's Dyestuff Department, and was named branch office manager in that city in 1949. He is a past chairman of the Philadelphia Section, AATCC.

Mr Loomis, a native of Huntington, Mass, has sold dyestuffs in the Springfield area for the past 31 years, starting in 1924 with Heller & Merz and continuing when that firm was acquired by Cyanamid in the early 30's.

RICHARD W KixMILLER has been elected vice president in charge of the chemical division of Celanese Corporation of America. Mr KixMiller joined the company in 1946, and in 1952 was named general manager of the chemical division.

HILLARY ROBINETTE, JR, president of Robinette Research Laboratories, and RICHARD L MOORE, Foster D Snell, Inc, have been elected chairman of their respective chapters of The American Institute of Chemists.

Mr Robinette, who had previously served as chairman of the Pennsylvania Chapter in 1949-50, was again elected to the post at the Chapter's annual dinner meeting at the Engineers' Club in Philadelphia. He succeeds ROBERT KUNIN, Rohm & Haas Co. The group also elected JOHN BOHRER, International Resistance Corp, as secretary-treasurer.

Mr Moore, who succeeds JOHN KOTRADY, Texas Co, was elected chairman of the New York Chapter at the Annual Honors Dinner and Meeting, which was held June 2 at the Hotel Commodore, New York, N. Y. Other elected officers were as follows: chairman-elect———*MURRAY BERDICK, Evans Research and Development Corp;* secretary-treasurer———*GEORGE FOY, Shulton, Inc;* national councilor———*Mr Kotrady;* Chapter councilors (3 yrs)———*JOHN HAPPEL and E J DURHAM, New York University.*

AARON PERMUT has resigned as chief chemist of Aula Chemicals, Inc, to devote full time to his consulting practice.

For the past two years Mr Permut has been a part-time consultant in the field of organic pigments, flushed colors and pigment dispersions. He will expand his future activities to include textile printing inks and resin emulsions.

He will conduct his activities from 263 Washington Place, Hasbrouck Heights, N J, where he maintains an office and laboratory for research and development.

Schmalenberger

Getchell

Brysson

Caldwell

Fitzgerald

Merritt

Thune

DeMaria

Crawford

ELMER W SCHMALENBERGER, assistant manager of the New York office of E I du Pont de Nemours & Co, Inc, and MARVIN F BALL, manager of services in the New York office of Du Pont's Textile Fibers Department, retired on June 1st.

Mr Schmalenberger has been associated with the dyestuff industry for 48 years, having started with Kalle & Co in New York in 1907 and with whom he remained until 1916. Other associations of Mr Schmalenberger in the field included being a part owner of American Color Mfg Co in Passaic, N J, from 1916 to 1918, and with Newport Chemical Works from 1918 to 1931. He entered the employ of the Du Pont Co in 1931.

Mr Ball served with Du Pont for 45 years, joining the firm in 1910. He went to New York in 1941 as manager of services for the sales division in that office of the Rayon Dept, which became the Textile Fibers Dept in 1952.

NELSON F GETCHELL of the National Cotton Council of America, has been appointed a collaborator of the USDA Southern Utilization Research Branch to confer with staff members on research to improve and extend the utilization of cotton.

RALPH J BRYSSON, formerly research scientist with the Naval Research Laboratory, Washington, D C, has joined the staff of the Southern Regional Research Laboratory, one of the laboratories of the Southern Utilization Research Branch, as chemist in the Cotton Chemical Processing Section. He will work under the direction of FRED S PERKERSON, supervisor of the Product Development Unit.

HELMUT WAKEHAM and LUDWIG REBENFELD have been named director of research and director of the Cotton Research Project, respectively, by Textile Research Institute. TRI has also announced that HOWARD J WHITE, JR, associate director of research, has been assigned responsibility for the Institute's educational program, which is carried out jointly with Princeton University.

THOMAS G TIERNEY has been appointed to represent Richmond Oil, Soap & Chemical Co, Inc in its Chattanooga office succeeding JAMES W LEDERER, who has been called to active duty with the United States Air Force. Mr Tierney, formerly with the Testworth Laboratories, Inc, will make his headquarters in Dalton, Ga.

ARTHUR L ALLEWELT has been transferred to Textile Chemical Sales as a technical representative at American Viscose Corporation's Philadelphia office. Previously a senior research chemist at the corporation's Marcus Hook, Pa, research center, Dr Allewelt assumed his new duties May 2.

ORLANDO ALOYSIUS BATTISTA, head of the Analytical Group at Avisco's Research and Development Division at Marcus Hook, was recently honored by St Vincent College, Latrobe, Pa, which conferred upon him the honorary degree of Doctor of Science.

National Starch Products Inc recently announced the appointment of CARLYLE G CALDWELL, JOHN F FITZGERALD, ROBERT W MERRITT and S F THUNE as vice presidents.

Dr Caldwell, who has been with the firm since 1940, was formerly assistant vice president in charge of research. Mr Fitzgerald, with the firm since 1935, has served as assistant vice president in charge of starch sales since 1953. Dr Merritt joined NSP in 1937, and has been assistant vice president in charge of manufacturing since 1951. Mr Thune, an assistant vice president since 1951, began his service with the Company in 1934.

Para-Chem, Inc has announced the appointment of F J DeMARIA as director of research and the appointment of RUSSELL F CRAWFORD, JR as a technical sales representative for the recently organized Specialties Division. Both men will make their headquarters at Para-Chem's Philadelphia Office and Laboratory.

Mr DeMaria was formerly a research and development chemist for James Lees & Sons Co for seven years.

Mr Crawford was most recently with the Atlas Powder Co where he served as a technical representative for the Sales Development Division of the Chemicals Department.

Proctor & Schwartz, Inc has increased its sales facilities at Spartanburg, S C, with all equipment sales in the Southern states now being handled at that point under the direction of HAROLD G BLACK. THOMAS A MAHAN has been assigned to the Spartanburg office and JOSEPH P CHRIST will continue in his present position. JOHN R SCHENCK, in addition to conducting his own business, will continue to serve Proctor & Schwartz as a sales consultant.

The Rayon and Acetate Fiber Producers Group has named GILES E HOPKINS research director.

The research program of the Producers will deal with the processing, handling and use of yarns and fibers after delivery from the producers' plants and with the end-use qualities of the products made therewith.

Mr Hopkins was technical director of the Wool Bureau from 1949 until his resignation in April. For the present he will make his headquarters at the office of the Group at 350 Fifth Avenue, New York.

Emptage

Stubblebine

Leighton

Redston

Rembe

Wallace

ALLEN LEROY EMPTAGE has been appointed head of Interchemical Corporation's central Engineering Department in New York. He succeeds RICHARD G KNOWLAND, who established the Department in 1948 and who will continue with it on a part-time consulting basis.

Mr Emptage joined Interchemical in 1937 and was associated with the early development work in connection with *Aridye* pigment colors. He was appointed plant engineer for the Textile Colors Division in 1945 and worked on process layout, and supervised the installation of equipment, in the present plant at Hawthorne, N J. Since the completion of the plant he has installed many of the new processes at Hawthorne.

Stowe-Woodward, Inc has named WARREN STUBBLEBINE director of research and development, and RALPH M LEIGHTON, technical service manager.

Dr Stubblebine was formerly associated with Connecticut Hard Rubber Co as director of development, and Armstrong Cork Co as head of the research section.

Mr Leighton has been with Stowe-Woodward for 24 years.

HAROLD W ROSE, president of Alliance Chemical Corp, recently addressed one of the American Management Association's courses as a luncheon speaker at the Hotel Astor, New York. The course was concerned with development of organization structure.

In his talk on "Informal Organization for Small Corporations," Mr Rose discussed the steps which can be taken by small companies to co-ordinate and integrate their activities. He described the operation of his company and the Blackman-Uhler Co as divisions of a holding company, The Andover Co, of which he is also president.

Allied Chemical & Dye Corp recently announced the appointment of JAMES E HOUSE as manager of the Detroit plant of its Solvay Process Division. He had served as assistant manager of the plant since 1950. At the same time it was announced that WILLIAM J BOBEK, assistant manager in charge of personnel, has been promoted and will hereafter assume overall responsibility for plant operations as well.

A D WINQUIST, JR and MARCUS FRENCH, for the past several years engaged in chemical research with the New Products Division of Allied's National Aniline Division, have been assigned to the Chemical Sales Department. Mr Winquist will be attached to the Sales Service Section while Mr French will act as technical sales representative.

WILLIAM J STEWART has been appointed director of research and development for Nuodex Products Co, Inc, a subsidiary of Heyden Chemical Corp. Mr Stewart previously was chief of the Protective Coatings Laboratory at Nuodex's Research and Development Department.

FRANK X RITTER has been appointed acting chief of the Protective Coatings Laboratory, where he was previously senior chemist.

REG W REDSTON, Geigy Dyestuffs Div, Geigy Chemical Corp, will serve as president of the National Council of the Canadian Association of Textile Colourists & Chemists for the coming year. Mr Redston, who has also held membership in AATCC and the Society of Dyers and Colourists for nearly 20 years, has been very active in the affairs of CATCC's Quebec Section since its inception. He served the Section as secretary-treasurer from 1946-51 and 1952-3.

Officers of the Quebec Section for the coming year are as follows: LOUIS J SHEPS, Trilon Chemicals Ltd, president; *E BRADLEY,* honorary president; *S W MILNES, Ayers Ltd,* past president; *C E COKE, Courtaulds (Canada) Ltd, and L E MOODY, Duplan Dyeing Co Ltd,* vice presidents; *J H LOWE, Nova Chemical Corp,* secretary; *and A GREYBORN, Bruck Mills Ltd,* treasurer.

Rodney Hunt Machine Co has announced the election of JACK W REMBE as vice president, and the appointment of W HARRY WALLACE as plant manager at Orange, Mass.

Mr Rembe has been with Rodney Hunt since June, 1947. He was appointed sales manager in 1953. In addition to his new duties, he will continue to direct sales activities of the company.

Mr Wallace joined the Rodney Hunt organization from the Bagley and Sewall Corp, where he was works manager.

C ROGER SUTTON, senior metallurgist at the Argonne National Laboratory of the U S Atomic Energy Commission for the past five years, has joined the Development and Research Division of The International Nickel Company, Inc, as a member of the Stainless Steel and Heat Resistant Alloys Section.

AARON STACK has been added to the technical staff of Key Chemicals Corporation at Medley (Miami Springs), Fla. Under the direct supervision of HOWARD C WOODRUFF, vice president and technical director, Mr Stack will be supervisor of technical developments.

The appointment of DONALD E MOAT as assistant director of marketing of the Leeds & Northrup Company has been announced. Formerly district sales manager in the Leeds & Northrup Cleveland office, Mr Moat will be acting head of the marketing department in Philadelphia, succeeding the late L E EMERICH.

A combined 118 years of service at Lowell Technological Institute has been terminated with the retirement from active teaching of Professors HERBERT J BALL, JAMES H KENNEDY, JR, and MARTIN J HOELLRICH.

Prof Ball, chairman of the division of engineering since 1953, joined the LTI faculty in 1906; Prof Kennedy, a faculty member since 1925, has served as head of the wool department since 1950; and Prof Hoellrich has served in the design and weaving department since 1916.

Roberts

Zilch

J R Hopkins

Roy

Hirsch

Musser

THOMAS H ROBERTS, director and technical vice president of Arnold, Hoffman & Co, Inc, has retired after 33 years service with the Providence firm.

Mr Roberts, a 1913 Brown University graduate and a pioneer in the dyestuff industry, began his career in the manufacture of dyes and intermediates in 1915. In 1922 he became associated with Arnold, Hoffman as a chemist. Three years later in 1925 when Arnold, Hoffman transferred its dyestuff operation from Providence to Dighton, Mass, he was put in charge of dyestuffs as technical director. In 1937 he was elected a vice president of the Company. At the close of World War II, Mr Roberts was appointed by his firm to head a new chemical and dye export department.

When Arnold, Hoffman became part of Imperial Chemical Industries Ltd in 1950, he was named a director of Arnold, Hoffman. Two years later he was elected technical vice president in charge of research, production, and engineering, which title he held at the time of his retirement.

Mr Roberts is a member of The American Chemical Society, The Society of Chemical Industries (American Section), and AATCC. During World War II and the Korean War he served as a member of The Dyestuff Industry Advisory Committee, Chemical Industry Advisory Committee, and the Quartermaster's Research and Development Committee on Dyeing and Finishing. For many years he has been active in the affairs of The Synthetic Organic Chemical Manufacturers Association.

Among Mr Robert's clubs are The Chemists' Club, The Turks Head Club (Providence, R I), The Foreign Trade Club of The Providence Chamber of Commerce, The Drysalters Club of New England and the Warwick Country Club.

The appointment of KARL T ZILCH to the research staff of Emery Industries, Inc, has been announced by the Cincinnati firm.

Dr Zilch will be directly connected with the Fatty Acids and Esters Laboratory, under the direction of V J MUCKERHEIDE. His background includes service with the Oil and Protein Division of the Northern Utilization Research Branch of the US Department of Agriculture in Peoria, Ill.

Recent moves in the sales organization of Becco Chemical Division, Food Machinery and Chemical Co, have been announced as follows:

ALBERT L SHUTTS is now in full charge of sales and customer service operations in the New York territory following the retirement of ERIC A HANSEN. Mr Shutts is assisted by EDWARD M ROTH, JR, who has been transferred from the Buffalo home office. Mr Hansen is now devoting full time to his own business enterprise in Florida.

JOHN R HOPKINS has been named assistant manager of the Southern District sales office at Charlotte, N C, where he will work directly under D S QUERN, manager. Mr Hopkins has served as a technical representative at Charlotte since 1946.

ALEXANDER P ROY, who has represented Emkay Chemical Co in the Carolinas since last September, has been promoted to sales manager for the Southern area including Georgia, Alabama, and Tennessee. Mr Roy will make additions to the technical staff now representing Emkay and will select a location for warehousing in the area.

Mr Roy, a past chairman of the South Central Section, AATCC, was formerly director of research and superintendent of dyeing and finishing at American & Efird Mills' Thread Division at Mt Holly, N C.

FRANK A HIRSCH has joined the Textile Finishes Sales Department of The Procter & Gamble Co. He will contact mills in the Alabama, Georgia and Tennessee areas.

Recent personnel news of note from Carbide and Carbon Chemicals Co, a Division of Union Carbide and Carbon Corp, includes the following appointments:

ROBERT J MUSSER, who for the past 1½ years has served as assistant division manager of purchases, has been named assistant manager of the Market Research Department. He will assist A H TENNEY, department manager.

T B MOORE has been named assistant superintendent of the Shipping, Order, and Traffic Departments at Carbide's South Charleston plant. MAXWELL HILL, JR succeeds Mr Moore as assistant superintendent in charge of fine chemicals and the Lower Blaine Island area.

M W DUNCAN and J R RETTER have been appointed assistant district sales managers of the Kansas City District and Detroit District, respectively.

WILLIAM E MORTON of the Department of Textiles, Manchester College of Technology, will be a visiting research professor of textiles at the School of Textiles, North Carolina State College, during September and October of this year.

Professor Morton is Head of the Department of Textile Industries at the Manchester institution.

WILLIAM BRYCE HAYNES has been chosen the 1955 winner of the $400 Keever Starch Company Scholarship in the School of Textiles at North Carolina State College.

Northern Dyeing Corporation, Washington, N J, has appointed ROBERT MARLIN LESH as superintendent and research director.

Prior to taking over his duties at Northern Dyeing Mr Lesh was with Burlington Mills for three years at the Altavista plant where he advanced to head dyer for the concern.

S CARROLL YOUNG has joined the Gamma Chemical Corporation, New York, as production superintendent. Mr Young was with General Aniline and Film Corporation for 11 years as superintendent of production at the Linden plant.

SAMUEL LENHER, president of the Synthetic Organic Chemical Manufacturers Association, has been elected a director, vice president, and member of the Executive Committee of the Du Pont Company. With his election, the number of board members was increased from 28 to 29. Succeeding Mr Lenher to the post of assistant general manager, Organic Chemicals Department, is GEORGE E HOLBROOK, formerly assistant director of Du Pont's Development Department.

In Du Pont's Textile Fibers Department, NORTON A HIGGINS has been named laboratory director of the Pioneering Research Division. He is succeeded in his former post of research manager — pioneering organic group by EMERSON L WITTBECKER, a research associate in the Division since 1952.

JOHN M WILSON has been named chief engineer of the development and design division of the engineering department of Minneapolis-Honeywell's Brown Instruments Division.

Wilson, formerly chief electrical engineer for the parent firm in Minneapolis, joined Honeywell in 1933.

The Board of Directors of The E Horton & Son Co, Windsor Locks, Conn, recently announced the election of DOUGLAS H THOMSON as president, succeeding ROBERT S COOPER, who has resigned in order to devote his full time to other interests. Mr Thomson has served the Company since 1948 as vice-president and secretary.

Two company executives were named to fill vacancies on the Board of Directors. GEORGE S CHIARAMONTE, general sales manager, and PHILIP T SHERMAN, treasurer and comptroller were appointed directors.

MARY A CAFFREY of Windsor Locks succeeds Mr Thomson as secretary of the Company. She has been assistant secretary since 1951.

EUGENE ALLEN, senior research chemist at the Bound Brook Research Laboratories of American Cyanamid Company, has been named editor of the Inter-Society Color Council News Letter. He succeeds I H GODLOVE, editor of the News Letter from 1937 until his death last August.

Purpose of the News Letter, which is published every two months, is to correlate all activities of the ISCC and to present material of general color interest to its members. Working with Dr Allen on the ISCC News Letter Committee are DOROTHY NICKERSON of the US Department of Agriculture, president of the Council, and DEANE B JUDD, National Bureau of Standards.

HENRY H REICHHOLD, board chairman of Reichhold Chemicals, Inc, has been elected to the board of Catalin Corp of America to fill the vacancy caused by the recent death of NORVIN H GREEN.

PAUL E STOCKER has joined the fabric development department of The Chemstrand Corporation as a textile technologist.

Before joining Chemstrand, Mr Stocker was in the fabric development department of Greenwood Mills, Inc.

ALAN M RICHTER is now serving as director of public relations for The Philadelphia Textile Institute Foundation, having succeeded STUART H CARROLL, who has joined the staff of the University of Pennsylvania Development Fund.

Polymer Industries, Inc, has added DOMINICK TOSCANO to its Springdale, Conn, production staff. Mr Toscano was formerly associated with the lacquer division of Atlas Powder Co.

Brice

Hall

Benefield

JOHN S BRICE has joined the Chemical Division of the Goodyear Tire & Rubber Company as a field representative in the Southeastern territory, headquartering in Atlanta, Ga. He will specialize in sales and service to the textile industry in Goodyear's line of Chemigum, Pliolite and Pliovic latices.

MARSHALL L HALL has joined Mona Industries, Inc as sales and technical representative for the New England States.

Appointment of JOHN BENEFIELD as a sales technician was announced last month by the Textile Department of Stein, Hall & Company, Inc. He will operate from the firm's Atlanta, Ga, office.

Mr Benefield served for 22 years with Eagle & Phoenix Mills (Division of Fairforest Finishing), Columbus, Ga.

In his new post with Stein, Hall, Mr Benefield will call on textile finishing plants in Georgia and Alabama.

Diamond Alkali Company has added two representatives to its southeastern sales staff. Appointees are ROBERT M HOPKINS, assigned to central and southern Florida, and RICHARD J JONES, who will cover northern Florida and southern Georgia. Hopkins makes his headquarters in Lakeland, while Jones is located in Jacksonville.

CHARLES P EGOLF, who has represented Diamond in Florida since, August, 1953, has been transferred to Memphis to take over sales responsibilities relinquished by MARTIN F WILKERSON, recently promoted to manager of the company's branch sales office at Houston, Texas.

L C GREEN of the Greenville, S C, office of Standard Chemical Products, Inc, shot a 71 to win the golf tournament that climaxed the company's annual sales meeting recently.

Tied for second place with 77's, were J H CALLICOTT, Greensboro, N C, office; R A JAEGERS, Sunbury, Pa, office and JOHN BLOETJES, Paterson, N J, office.

The Hewson Company, Inc has announced the appointment of J W WOLLETT as representative for sales, field application and servicing of its line for West Virginia and western Pennsylvania.

HORACE A CARTER, former executive vice president and treasurer of The William Carter Co, Needham Heights, Mass, was recently elected president of the company at a special meeting of the board of directors. At the same meeting, his son, LYNDALL F CARTER, vice-president, was elected to the board of directors. Both appointments were made to fill the unexpired term of the late WILLIAM H CARTER.

FRANK WEDGE, manager of commercial chemical development at Ansul Chemical Co since June of last year, has been named chemical products manager in that firm's General Sales Department.

TECHNICAL LITERATURE

(It is understood that the following literature is available from the sources listed in italics).

A LIST OF 'dag' DISPERSIONS FOR INDUSTRY———*Acheson Colloids Co, Div of Acheson Industries, Inc, Port Huron, Mich*———A revised 4-page booklet, listing 44 colloidal and semi-colloidal dispersions of graphite, molybdenum disulfide, mica, vermiculite, zinc oxide, and acetylene black. Carriers and diluents are given for each product, along with typical applications and physical data.

Eight entirely new dispersions have been added to this latest revision of Acheson's product list.

BLEACHING OF COTTON/NYLON BLENDS———*Technical Service Section, Textiles Fibers Dept, E I du Pont de Nemours & Co, Inc, Wilmington 98, Del*———This bulletin, N-23, replaces Bulletin CSB-N-6. It covers methods for bleaching with "Textone," hydrogen peroxide and sodium hypochlorite.

BRINE FOR TODAY'S INDUSTRY———*Industrial Div, International Salt Co, Inc, Scranton, Pa*———This 32-page booklet on the Lixate Process replaces "The Lixate Process for Making Brine," which has been a standard reference for brine users for many years. The new booklet contains a good deal more technical information than its predecessor and should prove to be even more helpful to industrial brine users.

CLEANING STEEL DRUMS IN RECONDITIONING———*American Wheelabrator & Equipment Corp, 1800 S Byrkit St, Mishawaka, Ind*———Bulletin 113-D shows how airless abrasive blast cleaning is being used at a number of plants. The process is capable of handling 30 and 55-gallon drums. Four case histories are presented.

COLORING ANODIZED ALUMINUM ——— *Sandoz Chemical Works, Inc, 61 Van Dam St, New York 13, N Y*———This comprehensive booklet refers to the following subjects: 1) types of aluminum finishes possible and the versatility of anodizing methods; 2) peculiarities of dyestuffs, their special properties and behavior patterns; 3) choice of alloy in relation to the appearance of the finished product; 4) surface preparation and the wide range of effects obtainable; 5) anodizing conditions and their control for consistent results; 6) sulfuric acid electrolyte and the specially selected dyes required; 7) dyeing procedure and control methods with color chips of most-used colors.

CONSULTING SERVICES (1955) ——— *Association of Consulting Chemists and Chemical Engineers, Inc, 50 East 41st St, New York 17, N Y*———Revised and streamlined, this 15th edition appears in a new format, 6 x 9, and contains 144 pages. Inside front and back covers carry excerpts from "Code of Ethics" and "Bylaws" respectively. Table of Contents, Foreword and a page entitled "How to Find Your Consultant" precede sections on I-Classifier, II-Scope Pages, and III-Index.———$1.00 per copy.

CONTROLLED VOLUME PUMPS IN WATER TREATING———*Milton Roy Co, Sta E, 1300 East Mermaid Lane, Philadelphia 18, Pa*———Prepared with the assistance of leading water-treating-consulting firms, this new Milton Roy Bulletin 953 describes and illustrates how controlled volume pumps are used in typical industrial water-treating systems.

Thorough analysis is given to cooling-tower-water-treating problems as well as methods and systems for waste and sanitary water treatment in this 24-page bulletin.

T44 COOLING CONTROL———*Sarco Co, Inc, Dept P, Empire State Bldg, New York 1, N Y*———Supplement 1 to bulletin 700-A describes Sarco's new self-powered T44 Cooling Control which holds temperature of cooling water in jackets or coils of equipment such as compressors, oil coolers, condensers and stills. Bulletin includes typical hook-up sketches.

DIISOCYANATES———*The Carwin Co, North Haven, Conn*———Contains product information on TODI and DADI, two new isocyanates now available from Carwin. Features of the bulletin are: General Properties, Special Properties, Typical Reactions, Stability, Uses, Assay Method, Toxicity, and Bibliography. Phase diagrams and reaction rates are also included.

EMCOL E-11 ——— *The Emulsol Chemical Corp., 59 E Madison St, Chicago 3, Ill*——— Technical Bulletin #45 describes Emcol E-11, alkyl benzyl triethyl ammonium chloride. This new quaternary ammonium salt is used primarily in deodorizing, slime control, cationic wetting action, etc.

EMERSOL OLEIC ACIDS———*Emery Industries, Inc, Dept S, Carew Tower, Cincinnati 2, O*———This 20-page booklet covers the various means of evaluating oleic acids with emphasis on end-product performance. This includes a discussion of the interpretation of analytical tests normally performed on oleic acid, along with a complete description of the line of Emersol oleic acids and the significance of their stability.

Also included is a section on handling oleic acid, an end-product selection chart, and a series of charts on such properties as viscosity, specific gravity, etc.

GIFFORD-WOOD OSCILVEYOR ——— *Gifford-Wood Co, Hudson, N Y*———Details of the Company's vibrating conveyor are covered on 4 pages.

GLYCOLS———*Carbide and Carbon Chemicals Co, 30 East 42nd St, New York 17, N Y*———F-4763 discusses the twelve commercial glycols and triols sold by Carbide as well as others available in development quantities. It describes the uses and suggested applications for glycols. Tabular data include properties, shipping information, specifications, test methods and constant-boiling mixtures. 33 charts contain useful physical property data. A selected list of references is also included. ——— 60 pages.

HANDY SOAP AND SYNTHETIC DETERGENT BUYING GUIDE———*Industrial Dept, Colgate-Palmolive Co, Jersey City 2, N J*———Designed for industrial and institutional users of cleaning products, this pocket-size book gives data on packaged synthetic detergents, scouring cleanser, etc, while recommending uses, and affording packaging and other information to the reader.

INTRODUCTION TO TEXTILES; STANDARD TEXTILE FABRICS; and TEXTILES: CARE AND TESTING ——— *International Correspondence Schools, Scranton 9, Pa.*———Specially prepared for home study by George E Linton, dean of the Textile Department, Fashion Institute of Technology (New York), these well-illustrated texts are available under the ICS Selective Plan.

Introduction to Textiles is now the first text offered by ICS to all textile students regardless of their particular phase of specialization. Of value to both the newcomer and those experienced in the field, it contains a brief, concise history of the industry. Attention is focused on the language of textiles, and comparisons are made among woven, knitted, braided, and felt fabrics. Part of the text is devoted to descriptions of how yarns and fabrics are made.

Standard Textile Fabrics is in two parts. Part 1 is devoted exclusively to the industry's major fiber: cotton. Part 2 emphasizes other fabrics, especially wool, silk, and synthetics. The texts are alphabetically arranged for use as handy reference books covering all fabrics from Abbots Cloth to Zephyr Gingham.

Textiles: Care and Testing covers this important phase of textiles. Among the topics discussed are: dry and wetcleaning, special cleaning problems, stain removal, art mending via rewEaving, stating, and patching; and consumer testing for wearing quality, light, wash, and dye fastness, effects of ironing and perspiration on cloth, and the problems of crocking and shrinkage.

LUBRICATION AND MAINTENANCE OF BALL AND ROLLER BEARINGS———*New York & New Jersey Lubricant Co, 292 Madison Ave, New York 17, N Y*———Complete with helpful lists of "do's" and "don'ts" to prolong bearing life, Bulletin #506 also includes information on the handling and storage of lubricants.

PRELIMINARY INFORMATION ON FORTISAN®-36———*Celanese Corp of America, Textile Div, Charlotte, N C*———Bulletin TD-28 uses text, charts and diagrams to present information on the technical properties and characteristics of Fortisan-36, Celanese's new industrial fiber, as well as recommendations for its processing.

Commercial production of 800 denier, 800 filament and 1600 denier, 1600 filament Fortisan-36 yarn is expected to start toward the end of the year at the Rome, Georgia, plant of Celanese Corporation of America.

PROGRESS REPORT ON ALLIED CHEMICAL'S DEEP-DYE NYLON———*Fiber Sales and Service, National Aniline Div, Allied Chemical & Dye Corp, 261 Madison Ave, New York 16, N Y*———This report discusses practical advantages of Deep-Dye Nylon for the millman, textile distributor, industrial user, and general consumer. Preliminary technical data are presented in tabular form.

REAGENT PRICE LIST———*Dajac Laboratories, Chemical Div, The Borden Co, Leominster, Mass*———This new catalog lists prices (effective April 1, 1955) for over 100 reagents for chemical testing and medical research.

Dajac also has available data sheets on blue tetrazolium; 2,4,7-trinitrofluorenone; carbobenzoxy chloride; phosphonium iodide; 2-hydroxy-3-naphthaldehyde; and 6-bromo-2-napthyl-beta-D-glucuronide.

RECORDING SPECTROPHOTOMETERS ——— *Beckman Instruments, Inc, Fullerton, Calif*——— Bulletin 405 discusses in eight pages several types of Beckman recording spectrophotometers. Written to assist the prospective purchaser of recording spectrophotometers, this booklet details the requirements for a variety of quantitative and qualitative applications and recommends the particular type of instrument for each use.

RESIDUAL CHLORINE ANALZER———*Leeds & Northrup Co, 4934 Stenton Ave, Philadelphia 44, Pa*———This 2-page data sheet presents details of the Analyzer's operation, illustrates important parts of the equipment, and outlines the benefits reported to result from the Coulometric principle on which it operates. (Request Data Sheet ND46-94(1)).

RICHARDSON MODEL E-50 AUTOMATIC BAGGING SCALE———*Richardson Scale Co, Van Houten Ave, Clifton, N J*———Bulletin No. 2749A describes this unit for high-speed bagging, which has a normal capacity range of 5-25 lb or 25-50 lb.

RUBBER ROLLS———*Rodney Hunt Machine Co, Orange, Mass*———This 8 x 10½, 60-page handbook is the first devoted exclusively to the subject. Complete with 34 illustrations and four tables of data, it contains information on every phase of roll manufacture, characteristic, application, operation, and maintenance.

There are chapters entitled: "What Is Rubber?," "How Rubber Rolls Are Made," "Density or Hardness of Rubber," "How Thick Should a Rubber Covering Be?," "Crowning and Tapering of Rubber Rolls," "Balancing of Rolls," "The Care and Feeding of Rubber Rolls," "Regrinding of Rubber Rolls," "Factors Affecting the Nip Action of Rubber Squeeze Rolls," and "Roll Ends."

Some of the illustrations show roll manufacturing and test equipment, how rolls are built up with calendared rubber sheets, bound with nylon tape, vulcanized, then ground to finished shape and size. Other photos show rubber rolls in use in paper, textile, plastic, and printing plants.

Line drawings and graphs lucidly illustrate many of the technical aspects of rubber rolls including: effect of rubber thickness on nip width and distribution of pressure; effect of linear pressure on width of nip, and pressure per square inch at different points through the nip; effect of concentration of load; effect of rubber density on pressure; effect of diameter on width of nip and distribution of pressure; and effect of deflection.

One of the tables contains a summary of rubber rolls troubles and suggestions for treatment.

A copy is available free to roll users on request to Rodney Hunt Machine Co, Orange, Mass. Copies are available to others remitting $3.00 to Rodney Hunt.

® Reg U S Pat Off

SHEET, BEDSPREAD, TOWEL SURVEYS——*Research Dept, Farm Journal, Inc, Washington Sq, Philadelphia 5, Pa*——Reports of national surveys on ownership of sheets, bedspreads, and towels by subscribers of Farm Journal magazine and Town Journal magazine are now available.

The surveys, published separately for each magazine, cover both farm and town homes. They report number of bedrooms, number and sizes of beds, statistics on sheets by material, size, color, type, brand, and price.

On bedspreads, the surveys report number and size of spreads owned; whether homemade or purchased; percentage of families owning matching spreads and draperies.

Statistics on towels include number of bath towels owned; design preference; prices paid; brand preferences. Comparable information is presented for hand towels, wash cloths, and dish towels.

SILK SCREEN COLORS, EQUIPMENT, SUPPLIES, SCREENS——*Advance Process Supply Co Inc, 1442 W Kinzie St, Chicago 22, Ill*——Catalog No. 55 is a complete specialized 95-page catalog devoted exclusively to the requirements of the screen processor.

Advance is a basic manufacturer of a complete line of screen process supplies, with a 34,000 square foot plant housing four departments, ie, Color & Chemicals, Supply, Reproduction (Screen), and Equipment Manufacturing.

SYMPOSIUM ON PARACHUTE TEXTILES——*PB 111663, OTS, U S Dept of Commerce, Washington 25, DC; $5.50 per copy, 220 pages*——This report, consisting of technical papers presented by Air Force and industry representatives and researchers at a Wright Air Development Center Symposium in 1953, states that the chutes used for deceleration of near sonic and supersonic aircraft, those used in the recovery and operation of guided missiles, and those for instrument recovery from upper air research missiles are imposing new demands for which present materials are declared "marginal."

Recent developments and present future requirements are discussed in the report, including development of improved webbing, the incorporating of design data into new fabrics, friction problems of parachute design, air permeability, textiles for use in free air facility test programs and in aircraft deceleration and missile recovery, and temperature and humidity problems.

Principal problems are those incident to all supersonic flights—resistance to higher temperatures brought about by operation of the power plant, air friction, and fiber on fiber friction at high speeds. Friction damage can spell the difference between recovery and loss of research missiles or upper air instruments costing hundreds of thousands of dollars at the enormous speeds being attained even today. In the future, increasing temperatures will soon make our present fibers useless for highly critical parachutes.

THE CHEMICAL INDUSTRY FACTS BOOK (2nd EDITION)——*Manufacturing Chemists' Association, Inc, 1625 Eye St, NW, Washington 6, DC*——This 160-page basic reference source on the chemical industry contains 15 chapters ranging from "What the Chemical Industry Makes" to such specifics as "Chemicals and Health" and "Chemicals in Defense."

Profusely illustrated with charts, graphs and tables, the second edition of the Facts Book updates virtually every facet of the industry. It is more complete than the first, offering an additional 52 pages of information, including such features as a listing of trade associations and professional societies identified with chemical manufacturing.

A teacher's guide, prepared by Walter S. Lapp, president, National Science Teachers Association, is available free to educators for use with the Facts Book.

The single-copy price of The Chemical Industry Facts Book is $1.00, postage prepaid. Discounts are available on bulk quantities.

THE MICO FIBER MICROTOMES——*Mico Instrument Co, 80 Trowbridge St, Cambridge, Mass*——This bulletin contains current information on Mico's Cat No. 200 Fiber Microtome for circular or loose fiber specimens, and their Cat No. 201 instrument for film or paper specimens.

Also included is descriptive material and an illustration of The Mico Cat No. 245 AATCC Standard Rain Tester (including the standard 6" x 6" AATCC White Textile Blotters).

THE STORY OF CHEMICALS YOU LIVE BY——*Diamond Alkali Co, 300 Union Commerce Bldg, Cleveland 14, O*——This enlarged 4th edition depicts Diamond Alkali's family of chemical products in 24 pages.

Products or product-groups discussed briefly are soda ash, caustic soda, chlorinated methanes, bicarbonate of soda, sodium silicates, calcium carbonates, chromates, specialized chemicals, organic chemicals, plastics and agricultural chemicals.

Pictorial supplements devoted to Diamond plants and a few random glimpses behind the scenes in making the company's products are included.

VULCANIZED FIBER: NEW LOOK AT AN OLD PLASTIC——*National Vulcanized Fibre Co, 1055 Beech St, Wilmington 99, Del*——This 6-page reprint, from the editorial pages of *Materials & Methods*, is a refresher course for designers and engineers on the properties and diversified applications of vulcanized fiber.

The article presents detailed specifications covering the physical and chemical properties of the many grades of this material and covers fabrication methods.

Also contained in the reprint are several illustrated case history applications showing how vulcanized fiber solved design and manufacturing problems for companies in various industries.

WATER-POLLUTION ABATEMENT MANUAL ON OILS AND TARS——*Manufacturing Chemists' Association, 1625 Eye St, NW, Washington 6, D C*——This 12-page manual, part of a continuing series discusses such subjects as permissible concentrations, sources of oils and tars in plants, removal of separable oil from water and disposal of oils.

The manual was prepared under the direction of the Water Pollution Abatement Committee of the MCA and is available at the single-copy price of 25 cents.

Other manuals available at the same single-copy price are:

Manual W-1—Organization and Method for Investigating Wastes in Relation to Water Pollution.

W-2—Water Pollution Abatement Manual for Insoluble and Undissolved Substances.

W-3—Water Pollution Abatement—Neutralization of Acidic and Alkaline Plant Effluents.

OBITUARY

HOWARD R HUSTON

HOWARD R HUSTON, 62, retired vice president and director of American Cyanamid Co, dide suddently on June 8th at his summer home at Truro, Mass. He had retired from his post with Cyanamid on May 30th and was serving the Company as a consultant.

Mr Huston had achieved prominence in industrial and diplomatic circles. He joined Cyanamid in 1930 as assistant to the president. He was elected vice president in 1951, and a director in 1952. He directed Cyanamid's activities in the fields of public relations and institutional advertising, which he pioneered in the mid-30's. He was also in charge of personnel administration and employee relations.

Before joining Cyanamid, Mr Huston was a member of the Secretariat of the League of Nations, a post to which he was appointed by Woodrow Wilson. He served as chief of internal services for the League. He was a member of the Secretariat of the Conference on Naval Armament between Great Britain, Japan and the U S. In 1946 he was advisor to the committee which chose the present site of the United Nations. In 1948 he was named a delegate to represent industry on the Chemical Industry Committee of the International Labor Office.

Born in Sweet Springs, Mo, Mr Huston received his A B degree from the University of North Dakota in 1917, and his M A from the same university in 1918.

Howard Huston

CARLE M BIGELOW

CARLE M BIGELOW, 65, consultant and former assistant to the general manager of the Fine Chemicals Div, American Cyanamid Co, died on May 9th in Somerville, N J, after a month's illness.

Dr Bigelow was associated with Cyanamid since 1934. Prior to that time he served Sayles Finishing Plants, Saylesville, R I, as an industrial engineer from 1912 to 1916, and chief engineer at Cooley and Marvin, Boston, from 1916-1924. From 1924 to 1935 he was president of Bigelow, Kent, Willard, and Co, Inc, Boston.

A native of Woonsocket, R I, Dr Bigelow received his B S in chemical engineering in 1912 and a degree in mechanical engineering in 1921 from the University of Rhode Island. He was awarded honorary DSc degrees from Suffolk University in 1941 and URI in 1952.

L E EMERICH

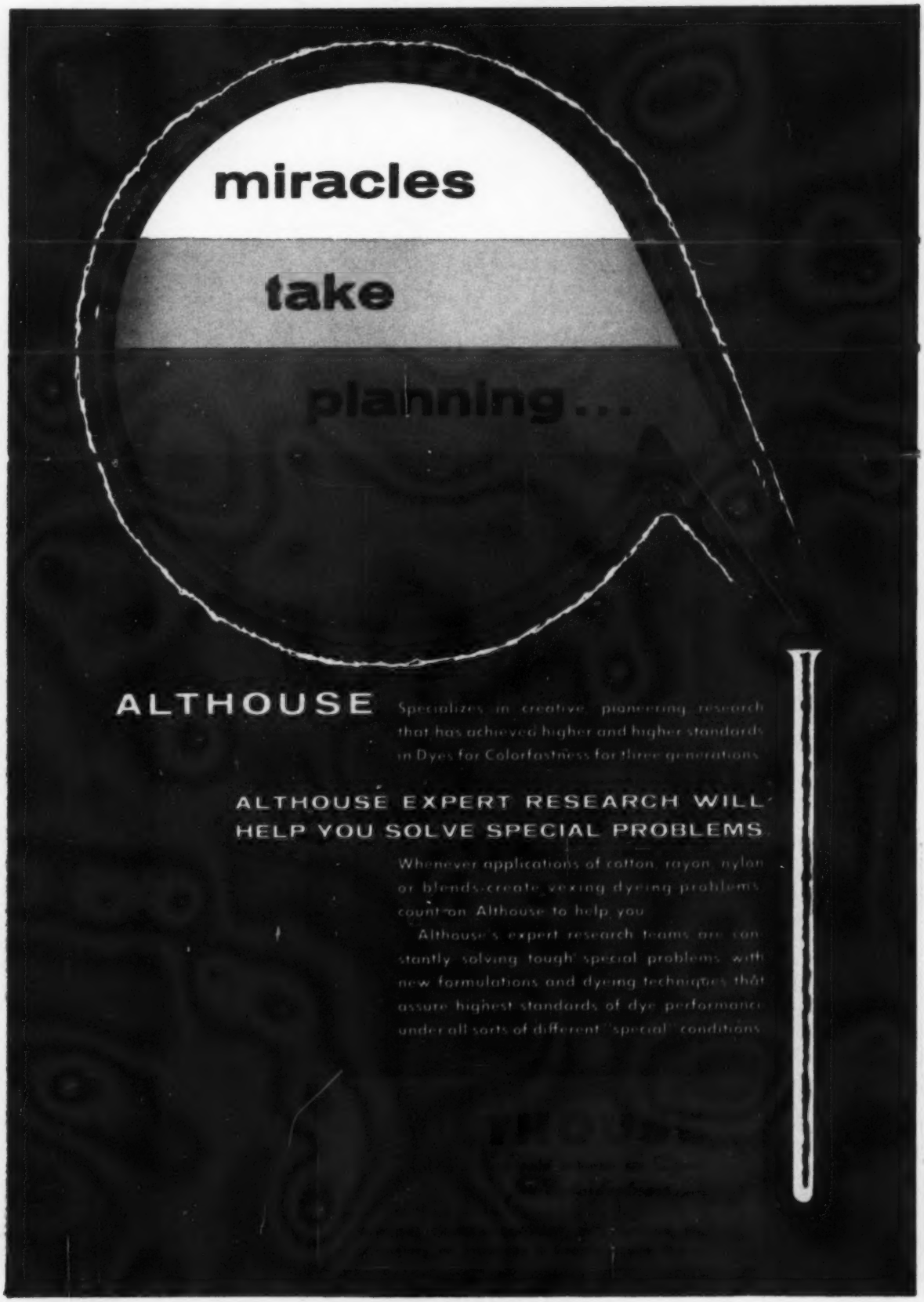
L E EMERICH, director of marketing for Leeds & Northrup Co, Philadelphia, died May 5th at Clara B Burke Convalescent Home, Plymouth Meeting, Pa, after an illness of several months. He was 56.

HAL POND EASTMAN

Funeral services were held May 5th for Hal Pond Eastman, 70, retired vice president and director of American Cyanamid Company, who died at Pasadena, Calif, following a prolonged illness.

Mr Eastman achieved prominence in chemical circles during his many years with Cyanamid, and played an important role in the Company's development. He was president of North American Cyanamid, Limited, Cyanamid's Canadian subsidiary from 1943 until 1950, and was elected a vice president and director of Cyanamid in 1947. Following his retirement from active service in 1950, he continued his relationship with the Company as a consultant until his death.

Mr Eastman had also been active in several companies associated with Cyanamid.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CLASSIFIED ADVERTISEMENTS

Advertisements in this section are restricted to HELP WANTED—POSITIONS WANTED—EQUIPMENT wanted or for sale. Rates, effective February 1, 1954: One-time, $10.00 per column inch; 3 consecutive times (same copy), $9.00 per column inch; 13 or more times, $8.00 per column inch; Position Wanted, $2.00 per column inch. Figure 38 average words per column inch. Publisher reserves the right to reject or discontinue any classified advertisement. Replies should be addressed: Box Number .., c/o American Dyestuff Reporter, 44 East 23rd Street, New York 10, N. Y.

ABSTRACTING SERVICE—Abstracting and digesting of foreign patents and periodicals. Literature review and special reports in dyestuff and cellulose chemistry. PAUL WENGRAF, 88-36 ELMHURST AVENUE, ELMHURST 73, NEW YORK.

WANTED: ORGANIC CHEMIST for research, preferably Ph.D. but not necessary. Must have extensive background and experience in surfactants, resin emulsions and other products pertaining to the textile industry. This man will head new research laboratory. Must be efficient and able to produce new and original products. New York Metropolitan area. Applicants forward personal data, education, experience and salary requirements. Write Box No. 934.

WANTED: Sales representative with some practical experience and technical ability to cover Georgia, Tennessee, and Alabama, for a major textile chemical company. Accounts already established. Excellent opportunity for right man. Write Box No. 868.

POSITION WANTED: Textile Colorist and Chemist. Twelve years' experience Sales-Service laboratory level. Standardizing, shade matching, trouble shooting. College graduate. Interested in laboratory position on supervisory level or will consider sales. Write Box No. 921.

SALESMAN WANTED: To handle well established line of chemical specialties for textile mills, especially dye house products. For North and South Carolina territory. Give full information. Replies held confidential. Write Box No. 925.

POSITION WANTED: Textile college graduate. Chemist. Diversified experience dyeing, finishing, auxiliaries manufacturing. Good administrative background. Age 33. Seeks responsible position plant or technical sales. Presently assistant superintendent dyehouse; plant chemist. Write Box No. 926.

WANTED: Colorist, for screen print plant located in Georgia, perferably man who has experience with printing all classes of dyestuffs and pigments on synthetic and natural fibers. Reply in detail including experience, personal history and salary desired. Write Box No. 927.

DEVELOPMENT CHEMIST — Progressive and expanding company requires graduate chemist with 3-5 years' of plant experience in printing and finishing. Present opening is for a man who is capable of working with a minimum of supervision on the development and evaluation of textile specialties for sizing, printing and finishing of cotton and synthetic fibers. Laboratory located in Charlotte, North Carolina. Give details of experience and salary requirements. Write Box No. 919.

POSITION WANTED: Production Manager, Colorist, Supervisor, in textile screen printing or allied fields. Customer liaison and business experience. Cost conscious. Will relocate. Write Box No. 876.

DYER WANTED: With technical background or practical experience of at least five years, as night supervisor for Georgia knit goods plant. Write in detail your background and salary desired. Write Box No. 935.

● Classified Advertisements ●

WANTED: DYEING AND FINISHING EXPERT—Graduate in chemistry, color or textile chemistry. Must have broad experience in laboratory and process. For technical service and development work. Unimpeachable character and attractive personality. Willing to travel. Good salary and opportunity for constructive work. Send full particulars to: Director of Industrial Relations, Courtaulds (Alabama) Inc., P.O. Box 1076, Mobile, Alabama.

POSITION WANTED: TEXTILE CHEMIST AND SALESMAN. Extensive mill experience with various textile chemicals including resins, surfactants, dyes, latex; experience with natural fibers and fabrics, synthetics and blends. Several years demonstrating and sales of chemicals. College and post-graduate study. Seeks responsible position. Write Box No. 931.

POSITION WANTED: An individual with an exceptional combination of plant, laboratory experience, desires technical-executive position with dyestuff, fiber manufacturer, or textile chemical firm. Textile college graduate. Experience includes Dyer, Finisher, Laboratory Director, Manager. Write Box No. 932.

WANTED: FIELD RESEARCH CHEMIST—Permanent position in Textile Research Laboratory of progressive chemical organization for young man possessing a textile chemistry background. Some knowledge of dry cleaning methods helpful but not necessary. Duties involve limited traveling in connection with laboratory research and field service work. In reply give resume of qualifications and salary desired. Write Box No. 933.

WANTED: Dyer for first shift. Must be experienced in both raw stock and piece dyeing. References essential. Apply: Anglo Fabrics Company, Inc., Webster, Mass.

WANTED: DYER-CHEMIST with technical background, experienced in dyeing wool, raw stock and skeins. Excellent opportunity with future. Age 30-45. Must be willing to relocate. State experience fully in letter. All replies held confidential. Write Box No. 936.

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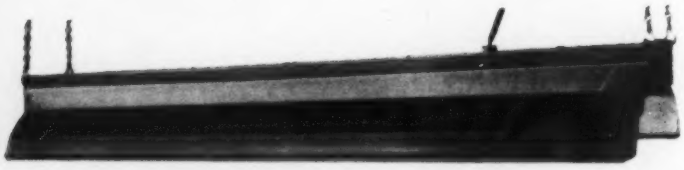

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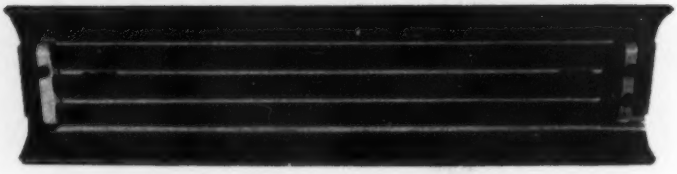

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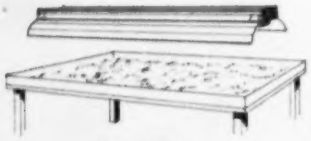
Fibre Contamination
Oil Spots



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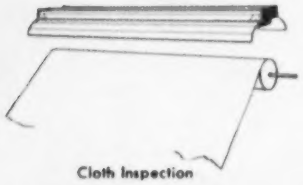

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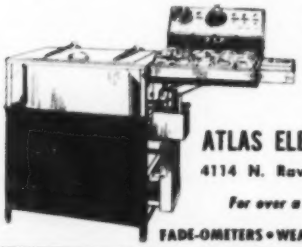

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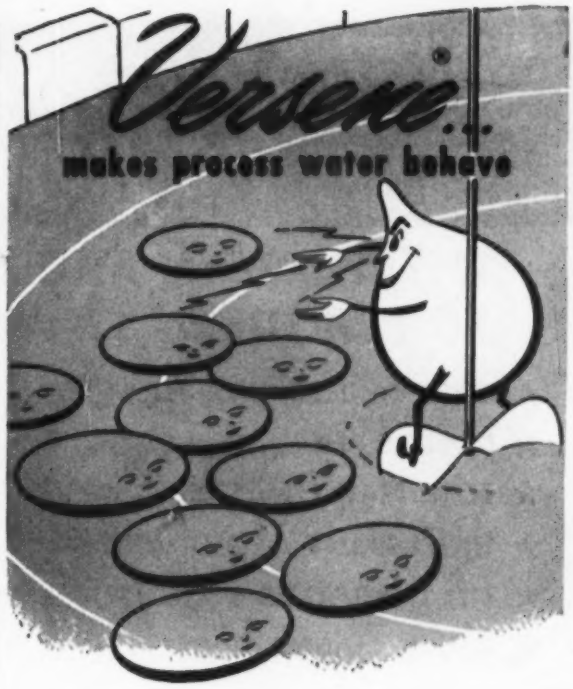

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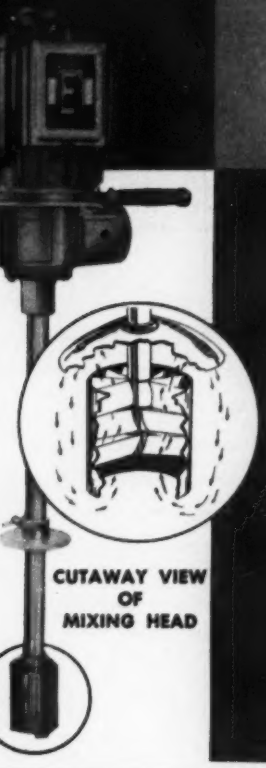

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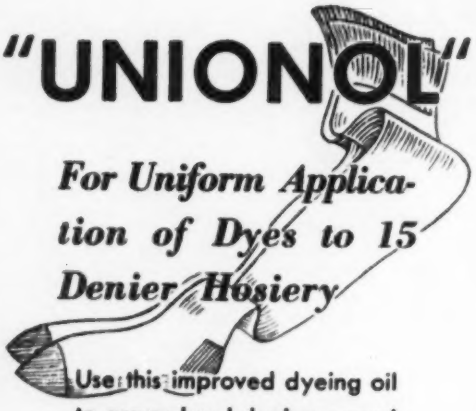

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